

Journal
of the
Royal Society of Western Australia

Vol. 44

Part 4

14.—An Annotated Catalogue of a Collection of Bird-Skins from West Pilbara, Western Australia

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Manuscript received—16th August, 1960

When identifying and registering a collection of 76 species of birds from West Pilbara, in the North-West Division of Western Australia, the author found that no proper application of trinomials was possible without some revisional work. The results of this are presented here. In addition it seemed advisable to give particulars and measurements of every specimen contained in the collection, as so many subspecies have been described on the basis of size differences, without the actual measurements ever having been published.

As the main objective was identification of the material at hand, no thorough revisions have been made of the majority of species. In some cases however, more extensive notes are given, for example of *Cacatua tenuirostris*, *Ninox novaeseelandiae*, *Aegotheles cristatus*, *Coracina novaehollandiae*, *Amytornis striatus*, and *Meliphaga virescens*. Under *Pomatostomus temporalis* corrections of a number of type localities that had been restricted by Mathews are made. A new subspecies of *Ninox novaeseelandiae* from Western Australia is proposed, and it proved desirable to provide a new name for the subspecies of *Falco moluccensis* occurring on Celebes.

In July and early August, 1958, a party from the Western Australian Museum spent about three weeks collecting zoological material in West Pilbara (region of the Fortescue River and Hamersley Ranges), in the tropical north-west of Western Australia. Birds were collected mainly by Mr. K. G. Buller and the author, though several other members of the party made contributions. The collection consists of 76 species and 269 specimens. During the first half of our stay our base was Millstream Homestead, where we enjoyed the hospitality of Mr. and Mrs. S. Gordon; the second half we stayed, by kind permission of Mr. R. Parsons and Sir Edward Lefroy of Coolawanyah, in the abandoned homestead of Tambrey Station. The localities of collecting are indicated on the map (Fig. 1).

Ornithologically the region is well known, a fact largely due to the activities of the veteran collector F. Lawson Whitlock, who spent over 3½ months (July–November 1922) at Millstream on behalf of H. L. White. Though Whitlock (1923, p. 259) modestly stated that: "Of course, in a period of a few months it would not be possible to do more than run over such an extensive area

of country, and with small chances of observing rare or secretive forms of bird-life", it says much for the thoroughness of his investigations that, during an admittedly much shorter visit, we were not able to add a single species to the local list. The only addition to the avifauna of the region made here is *Neophema elegans*, of which Mr. E. W. Parsons forwarded a specimen collected at Hooley Station; this species had never been recorded from so far north and was probably a straggler.

Nevertheless, no apology is needed for presenting this paper. The justification for a full systematic discussion of the whole collection is to be found in the publications of Gregory M. Mathews. Though the species of Australian birds are very well known, Australian ornithology, especially where zoogeography and serious study of geographic variation are concerned, will for many years to come be handicapped by the chaos created at the subspecific level by Mathews. In recent years several ornithologists, notably Amadon, Condon, Keast, Mack and Mayr, have commenced the unrewarding task of cleaning up the nomenclatorial mess, created by a man who realized full well what he was doing as is evident from his statement: ". . . I have concluded that the value of subspecies is almost negligible in Australian Ornithology. In the Palaearctic Region they may be useful, but even here I think they have been much overrated; while if large series are examined from Australia very many subspecific forms can be differentiated, but larger series always link most extreme cases up very quickly" (Mathews 1917a). Since practically all named Australian subspecies were created by Mathews himself it is surprising that this condemning statement did not deter him from continuing the production of subspecific names (useless by his own admission) at an undiminished rate. Fortunately I need not give an appreciation or depreciation of the ornithologist Mathews, for this was done in an admirable way by Serventy (1950).

For the loan of material and for information concerning specimens under their care I am indebted to Dr. D. Amadon (American Museum of Natural History, New York), Mr. H. T. Con-

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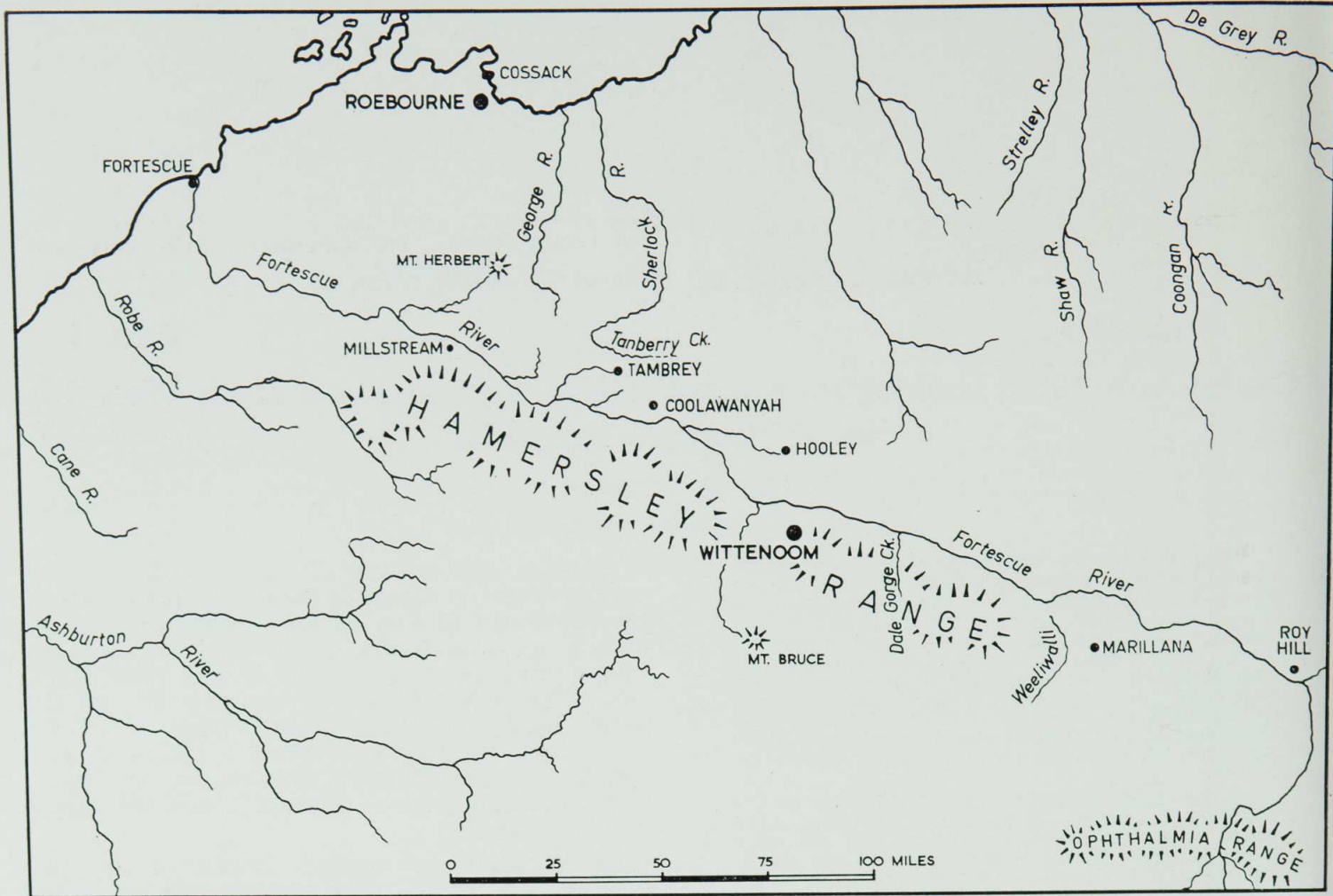


Fig. 1.—Map of the Fortescue River and Hamersley Ranges, showing collecting localities.

don (South Australian Museum, Adelaide), Dr. Chr. Jouanin (Muséum National d'Histoire Naturelle, Paris), Dr. G. C. A. Junge (Rijksmuseum van Natuurlijke Historie, Leiden), Dr. J. A. Keast (Australian Museum, Sydney), Mr. G. Mack (Queensland Museum, Brisbane), Mr. A. R. McEvey (National Museum of Victoria, Melbourne), Mr. R. Wagstaffe (Liverpool Public Museums). Dr. L. B. Holthuis (Leiden) supplied me with information concerning names based on hybrids.

Dromaius novaehollandiae subsp.

Emu

Five chickens taken on Millstream Station were presented to us by Mr. Stuart Gordon (A 8324-28). Though specimens were repeatedly observed, the species did not give an impression of being very common in the region.

Podiceps novae-hollandiae novae-hollandiae

Stephens

Dabchick

Podiceps Novae Hollandiae Stephens, in Shaw's Gen. Zool. XIII, pt. I, 1825, (1826?), p. 18—New Holland.

One specimen (Table I)

A few pairs were present on the larger lakes particularly in the Fortescue River. A revision was given by Mayr (1943).

Phalacrocorax sulcirostris sulcirostris (Brandt)

Little Black Cormorant

Carbo sulcirostris Brandt. Bull. Sci. Acad. Imp. Sci. St. Petersb. 3, 1837, p. 56—*Terrae australes* — New South Wales (reference copied).

Mesocarbo ater territorii Mathews, Birds. Aust. IV, 1915, p. 176—Hermit Hill, Northern Territory.

One specimen (Table II)

Discussion. Mathews (1912c, 1914-1915) has discussed the applicability of the name *ater*, but as Berlioz (1927) has shown, he was wrong as the type of *ater* proved to belong to *P. magellanicus* Gmelin.

The name *territorii* is nowadays generally accepted (Peters 1931, Hoogerwerf 1947, 1954, and other publications by the same author, Smythies 1957). The description of this race is one of those gems so richly found in Mathews's works: having given a plate and a full description under the name *Mesocarbo ater ater*, he adds as a kind of afterthought: "The bird figured and described is a male, collected at Hermit Hill, Northern Territory, on the 7th August, 1894, and is the type of *Mesocarbo ater territorii*". Nowhere appears the slightest suggestion that Mathews considers the bird in any way distinct from the nominate race and I wonder if perhaps §114 sub (3) of the International Code of Zoological Nomenclature may be applicable, for there is no indication that the name *territorii*, as published, was intended for use in zoological nomenclature.

As far as I know nobody has ever supplied evidence that *territori* differs from *sulcirostris* at all. Not having examined material from eastern Australia, I am unable to settle the issue finally, but until evidence to the contrary may be brought forward I prefer to regard *territori* as a synonym.

Anhinga rufa novae-hollandiae (Gould)

Darter

Plotus Novae-Hollandiae Gould, Proc. Zool. Soc. Lond. 15, 1847, p. 34—The rivers of the whole of the southern coast of Australia.

Plotus novae-hollandiae derbyi Mathews, Aust. Avian Rec. 1, 1912, p. 74—Derby, North-west Australia.

One specimen (Table III).

Discussion. *P. n. derbyi* was described as differing from *novae-hollandiae* "in its larger wing-measurement, viz. 364 mm". As was his habit, no comparative measurements were given by Mathews.

Adult specimens in the Western Australian Museum have the following wing-measurements:

S. W. A. M: 348; ♀: 337, 342, 348, 348; sex?: 339, 343.

Derby, N. W. A. ♀: 319.

South Alligator R., N.T. ♂: 331.

If anything, these figures suggest that the northern birds are smaller, not larger. Peters (1931) had synonymised *derbyi* with *novae-hollandiae*.

Notophox pacifica (Latham)

Pacific Heron

Ardea pacifica Latham, Index Orn., Suppl., 1801, p. xv—New South Wales (reference copied).

One specimen (Table IV)

Discussion. Mathews (1913-1914) withdrew his race *alexandrae* that was supposed to be darker on the back, though later (Mathews 1931) he upheld it again. This species cannot be divided in geographical races.

Nycticorax caledonicus hilli Mathews

Nankeen Night-Heron

Nycticorax caledonicus hilli Mathews, Novit. Zool. 18, 1912, p. 233—North-West Australia (Parry's Creek).

One specimen (Table V)

Discussion. According to Mathews (1912a) the birds from northern Australia would differ from those inhabiting southern Australia in their paler coloration. Mathews (1913-1914) himself concluded that only one race inhabits Australia, which is confirmed by Peters (1931) and Amadon (1942).

As a matter of fact some skins are more vinaceous brown, others more chestnut brown (fat skins?), but this variation is entirely irregular and not geographical. The oldest name for the Australian race is *hilli* (cf. Mathews 1913-1914).

Threskiornis spinicollis (Jameson)

Straw-necked Ibis

Ibis spinicollis Jameson, Edinb. New Philos. J. 19, 1835, p. 213—New South Wales (reference copied).

One specimen (Table VI)

A flock of thirty specimens was habitually present near Millstream Homestead.

Discussion. Peters (1931) placed *fitzroi* Mathews (1912a, p. 228) in the synonymy—this synonym is quoted by Whittell & Serventy (1948,

p. 32) as *fitzroyi*, which would perhaps be right as an emendation, but is incorrect as a quotation of the original description.

Cygnus atratus (Latham)

Black Swan

Several pairs with small and middle-sized young were present on the large pools of the Fortescue River. No specimens were collected.

Anas superciliosa rogersi Mathews

Black Duck

Anas superciliosa rogersi Mathews, Aust. Avian Rec. 1, 1912, p. 33—Augusta, West Australia.

Two specimens (Table VII)

Irides light brown, bill greenish grey, legs greyish brown. The male is in fresh plumage, the female in abraded plumage.

These ducks were common on the Fortescue River and on all other bodies of water of sufficient size.

Milvus migrans affinis Gould

Black Kite

Milvus affinis Gould, Synops. Birds Aust., pt. III, 1838 (April)—Australia.

M[ilvus] aterrimus Gould, Proc. Zool. Soc. Lond. 5, (1837), 25 May 1838, p. 99—nomen nudum.

Milvus korschun napieri Mathews, Novit. Zool. 18, 1912, p. 249—North-West Australia (Napier Broome Bay).

One specimen (Table VIII)

No moult, tail slightly abraded.

Discussion. There is much individual variation in colour in this species and Mathews's *napieri* diagnosed as differing from *affinis* in its darker coloration above and below is doubtless a synonym; it was already listed as such by Condon & Amadon (1954).

Haliastur sphenurus (Vieillot)

Whistling Eagle

Milvus sphenurus Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed. XX, 1818, p. 564—Australia (reference copied).

One specimen (Table IX)

No moult, wings fresh looking, tail abraded.

Discussion. No races are admitted by Amadon (1941) and Condon & Amadon (1954).

Aquila audax audax (Latham)

Wedge-tailed Eagle

Vultur audax Latham, Index Ornith., Suppl. 2, 1801, p. 12—New Holland (reference copied).

One specimen (Table X)

Repeatedly observed near Millstream and Tambrey.

Discussion. Peters (1931, p. 256) had already placed *carteri* Mathews in the synonymy, and the fact that Mayr & Rand (1937, p. 19) listed a specimen from New Guinea under a trinomial was probably but a slip, as Mayr (1941b) gives it a binomial again. Quite recently a race has been described by Condon & Amadon (1954) so that a trinomial has now to be used.

Circus approximans subsp.

Swamp Harrier

No material.

Several times I observed a specimen at short range as it was hunting over the water and reed-beds of the Fortescue River at Millstream Station.

Falco berigora subsp.

Brown Hawk

Five specimens (Table XI)

The commonest bird of prey in the area, moreover not shy and easy to collect.

Discussion. Condon (1951a) revised this species but owing to lack of material had to leave the position of the populations of the north-west unsettled. As Condon included in his study only a small part of the material from the Western Australian Museum, I give here the measurements of all our specimens.

South-western Australia [Kojonup, Monger's Lake (Perth), South Perth, Guildford, King R. (Albany), Bridgetown, Canning R., Lake Yanchep, Cottesloe, Bannister, Lake Muir, Peringillup, Herdsman's Lake (Perth), Wandering, Mullalyup, Greenough R. (Geraldton)]:

♂: 305, 306, 307, 315, 341; average (315).

♀: 300, 305, 305, 305, 322, 326, 330, 330, 332, 335, 335, 336, 336; (323).

o?: 304, 305, 328.

Mid-western Australia (Carnarvon, Day Dawn, Dirk Hartog Island):

♂ 309; (309).

♀: 307; (307).

o?: 310.

North-western Australia (Millstream, Tambrey, Point Cloates):

♂: 318; (318).

♀: 331, 341, 362; (345).

o?: 327, 358.

North Central Western Australia (Canning Stock Route):

♂: 321, 326; (323.5).

♀: 314, 342; (328).

o?: 327.

West Kimberley Division (Derby, Brooking Creek):

♀: 355, 365; (360).

When these measurements are compared with those given for the nominate race by Condon (females, wing 360-380, average 371) and Amadon (1941) (whose figures are difficult to interpret because he does not separate males from females) it is evident that birds from south-western Australia are decidedly smaller which confirms the validity of *Falco berigora occidentalis* (Gould). My figures show that as regards size birds of the mid-west fit in with those of the south-west, but that those of the Kimberley Division, as far as one can judge from two skins, are much larger whereas material from the north-west is presumably intermediate in size. Specimens from the Canning Stock Route are smaller. Many specimens in the series are immature and I also suggest that the sexing may have been wrong in a number of specimens. Therefore I prefer not to give a definite opinion on the subspecific status of the birds from the north-west. Condon's revision gives an impression of being a very fine and careful piece of work, but he leaves the status of the birds from north-western and northern Western Australia open, and also I doubt, in view of the apparently complete intergradation that exists, if it is advisable to nomenclatorially recognise quite as many races as he does. Subspecific names have the disadvantage of suggesting discontinuity where in fact continuity exists. Condon (1951a, p. 173) states that: "There do not appear to be good reasons for using the name *Ieracidea* to separate this somewhat aberrant, longlegged falcon generically; osteologically it conforms to *Falco*." Other workers (Condon & Amadon 1954) have denied the validity of the genus *Ieracidea* and even the splitter Mathews

(1915-1916), who in that period often showed very sound judgment, expressed as his opinion that it is hardly worth maintaining. Unfortunately this means that the name of the bird known at present as *Falco moluccensis occidentalis* (Meyer & Wigglesworth) becomes pre-occupied by *Falco berigora occidentalis* (Gould); therefore I propose for *Tinnunculus moluccensis occidentalis* Meyer & Wigglesworth (Abh. Mus. Dresden, 1896, Nr. 2, p. 8) the name *Falco moluccensis jungei* nomen novum.

It is not without considerable hesitation that I venture to re-name the Celebes population as according to Mayr (1941a), the name *microbalia* (Oberholser 1917), given to a specimen from Solombo Besar in the Java Sea, may be applicable. As only a single specimen of *microbalia* is known, and the difference between the Java- and Celebes-races is at most rather slight (cf. Smythies 1957) I take the risk of supplying a new name for *occidentalis*. In contradistinction to Mayr, Oberholser (l.c.) considered *microbalia* identical with the Java populations and stressed its difference from the Celebes populations. From the zoogeographic point of view it is most unlikely that the birds from Solombo would be closer to those from Celebes than to those from Java. I may add that if Delacour (1947) is right in giving the range of *javensis* as: "Borneo, Java, Kangean, Solombo-Besar, . . .", the name *microbalia* will have to replace *javensis*. In view of these uncertainties it seems best to accept *microbalia* provisionally as a doubtful endemic race of Solombo Besar.

Falco cenchroides cenchroides Vigors & Horsfield

Nankeen Kestrel

[*Falco*] *cenchroides* Vigors & Horsfield, Trans. Linn. Soc. Lond. 15, (1826), 1827, p. 183—New Holland = Parramatta.

One specimen (Table XII)

A fairly common species, usually seen on the edge of rocky country and open plains.

Discussion. Even Mathews (1915-1916) concluded that no races can be distinguished (although he changed his opinion repeatedly in subsequent publications) but I retain a trinomial as recently Rand (1940) described a race from the highlands of Dutch New Guinea.

The type of *F. unicolor* Milligan in the Western Australian Museum has the whole under surface vinaceous rust colour, whereas in all our other specimens the under surface is largely white; it seems to be an aberrant individual. The wing measurements cannot be taken as the wings have been clipped on both sides; this was already noted by Mathews (1922), who gave a good re-description of the type.

Porphyrio porphyrio subsp.

Swamp Hen

No material.

This species was first recorded by Whitlock (1923) from the reed-beds of the Fortescue River at Millstream though he did not manage to collect specimens. Several times I observed individuals feeding on a mudflat outside the reeds, but they were extremely shy and wary

and although I spent as much time as I could afford trying to stalk them, I failed to obtain any.

The subspecific allocation of this population would be of some interest in view of the fact that Western Australia is inhabited by two very distinct races: *P. p. melanotus* Temminck in the Kimberley Division, and *P. p. bellus* Gould in the south-western part of the state; either might be expected at the Fortescue River. Probably the birds seen belonged to *melanotus*, for, though I had several good views of specimens, I never saw anything of the azureous colour of *bellus*.

Eupodotis australis (J. E. Gray)

Australian Bustard

Only a few specimens were seen on the grass plains of Millstream Station. One bird was taken, but during the night the cats of the homestead managed to get at the fresh skin and destroyed it beyond repair.

Charadrius melanops Vieillot

Black-fronted Dotterel

Charadrius melanops Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed. XXVII, 1818, p. 139—aux Terres Australes = New South Wales (reference copied).

Charadrius melanops marngli Mathews, Novit. Zool. 18, 1912, p. 218—North-West Australia (Marngle Creek).

Two specimens (Table XIII)

Irides sepia, eyelid red, bill, basal two thirds red, tip one third black, legs pink, nails black. Testes of No. A 8286, 7 × 4mm. Neither specimen shows moult. No. A 8286 has a pinkish wash over the belly feathers, whereas A 8285 has the under surface pure white.

Fairly common in suitable places—open shores of lakes and waterholes.

Discussion. Specimens from New South Wales, South Australia, and north-western Australia all agree in colour and measurements, so that *marngli*, said by its describer to differ in its much paler upper surface, becomes a synonym. Specimens in abraded plumage are somewhat paler above than freshly moulted specimens.

Geopelia striata clelandi Mathews

Peaceful Dove

Geopelia placida clelandi Mathews, Novit. Zool. 18, 1912, p. 186—West Australia (Coongan R.).

Two specimens (Table XIV)

Irides cream, bill brown, legs coral pink.

Common at open places close to Millstream Homestead, but not observed elsewhere, so that, as in other parts of its range, the species is probably more or less confined to settled places.

Discussion. These specimens are more sand colour, less greyish on the upper parts than skins from the Northern Territory and New South Wales; apparently *clelandi* is a fairly well-marked race, as was already pointed out by Mayr (1951).

Geopelia cuneata (Latham)

Diamond Dove

Columba cuneata Latham, Index. Orn., Suppl., 1801, p. lxi—Sydney, New South Wales (reference copied).

Geopelia shortridgei Ogilvie-Grant, Bull. Brit. Orn. Cl. 23, 1909, p. 73—Carnarvon, W. Australia.

One specimen (Table XV)

Common at Millstream in the same habitat as the preceding species, but as a whole less dependent on the presence of man. Early in July we observed several specimens at the middle branch of the Gascoyne River, far away from any human habitation, and collected one male (A 8283).

Discussion. No races are recognisable (Mayr 1951). The name *shortridgei* has usually been neglected, probably (as its describer already suggested) because it is apparently based on a hybrid between *G. cuneata* and *G. striata* (see also Carter 1914). This in itself does not, however, invalidate the name according to the present rules of nomenclature. Names given to "hybrids as such" are not valid, but from the original description it is evident that Ogilvie-Grant did not consider his specimen to be a hybrid as such. As far as nomenclature is concerned, the whole matter of hybrids is apparently still unsettled, and unless and until rules to the contrary may come into operation I propose that *shortridgei* be placed in the synonymy of *G. cuneata*, which saves the junior name *Geopelia placida clelandi* Mathews for its other parent form.

Phaps chalcoptera subsp.

Common Bronzewing

One specimen (Table XVI)

Apparently not common.

Discussion. The material of this species in the collections of the Western Australian Museum is entirely insufficient for working out its geographic variation. The single bird obtained seems not to differ from specimens from the south-western part of the State.

Histriophaps histrionica (Gould)

Flock Pigeon

Columba (Peristera) histrionica Gould, Proc. Zool. Soc. Lond. 8, (1840), May 1841, p. 114—plains of interior of Australia = New South Wales (cf. de Schauen-see 1957).

Phaps histrionica alisteri Mathews, Novit. Zool. 18, 1912, p. 189—North-west Australia (Parry's Creek).

Two specimens (Table XVII)

This nomadic species shows no geographical variation.

Ocyphaps lophotes whitlocki Mathews

Crested Pigeon

Ocyphaps lophotes whitlocki Mathews, Novit. Zool. 18, 1912, p. 191—East Murchison, South-West Australia.

Three specimens (Table XVIII)

Irides orange, bill black, legs coral red, or bill blackish, rim of eye and legs crimson.

Widely distributed in the region, mainly in small bushes in more or less open country (creek beds, etc.).

Discussion. Three specimens from New South Wales in our collection differ from our Western Australian material by the larger white tips of the rectrices; the difference in striation on the scapulars also mentioned by Mayr (1951), is hardly verifiable in my material.

Lophophaps plumifera ferruginea Gould

Plumed pigeon

Lophophaps ferruginea Gould, Handb. Birds Aust. II, 1865, p. 137—Gascoyne River, W.A. (reference copied).

Three specimens (Table XIX)

Irides orange, bare skin round eye red, bill dark leaden, legs black.

Very common at both Millstream and Tambrey.

Discussion. A revision of the species was given by Mayr (1951), who described a new race *proxima* from Hall's Creek Road, Middle Fitzroy River (200 miles up) (type locality) and Margaret River (260 miles from Derby), western Kimberleys.

Our material of the Kimberley Division consists of one specimen from Carlton (close to Victoria River, Northern Territory, the type locality of *plumifera*), two from Moola Boola Station, one from Margaret River, one from Fitzroy River, 200 miles from mouth.

The first four are uniform, more earth colour, less ferruginous, on the upper parts than *ferruginea* and white underneath; they lack the vinaceous wash on the upper parts, which is often present in *ferruginea*. The last mentioned specimen, from the type locality of *proxima*, is slightly more ferruginous above, identical in this respect with *ferruginea*, but retains the white under parts. This confirms the validity of *proxima* (though one might wonder if it is desirable to name an apparently pure intermediate), but contrary to Mayr's conclusion, our material suggests that the Margaret River should be included in the range of the nominate race.

Cacatua tenuirostris sanguinea Gould

Corella

Cacatua sanguinea Gould, Proc. Zool. Soc. Lond. 10, (1842), 1843, p. 138—North Coast of Australia — Port Essington.

Cacatua gymnopsis Sclater, Proc. Zool. Soc. Lond. 1871, p. 490, 493—no certain locality.

Cacatoes sanguinea distincta Mathews, Novit. Zool. 18, 1912, p. 265—Northern Territory (Alligator River, 60 miles inland).

Cacatoes sanguinea subdistincta Mathews, Novit. Zool. 18, 1912, p. 265—North-West Australia (Parry's Creek).

Cacatoes sanguinea apseyi Mathews, Aust. Avian Rec. 1, 1912, p. 36—Melville Island, Northern Territory.

Cacatoes sanguinea ashbyi Mathews, Aust. Avian Rec. 1, 1912, p. 36—New South Wales (Yanco: according to Condon, 1951b, this is in the interior of Queensland).

Licmetis tenuirostris derbyi Mathews, Aust. Avian Rec. 3, 1916, p. 57—Derby, North-west Australia.

Ducorpsius sanguineus westralensis Mathews, Birds Aust. VI, 1917, p. 211—Murchison, Mid-west Australia.

Ducorpsius sanguineus normantoni Mathews, Birds Aust. VI, 1917, p. 211—Normanton, Queensland.

Two specimens (Table XX).

Irides brown, bill white, legs grey: The weight of specimen no. A 8114 was 550 g. No moult, plumage slightly abraded.

Common near water throughout the area; flocks of hundreds would come to the Fortescue River to drink.

Discussion. Mathews (1916-1917, 1920, 1931, 1946) placed *sanguinea* and *tenuirostris* in different genera, and even an author with sound ideas like Peters (1937) kept them in different sub-genera. Quite recently Vane (1959) came with a revision of the cockatoes, in which *sanguinea* is generically separated from *tenuirostris*, but only subgenerically from *Cacatua roseicapilla*. In all these classifications I cannot see anything but curious survivals from the Linnean bill-and foot-structure classification. I have not the slightest hesitation in reducing *sanguinea* to a subspecies of *tenuirostris*, as the only important morphological difference between the two is the shape and length of the bill. In behaviour and voice the two subspecies (*sanguinea* and *pastinator*) agree thoroughly as my recent field observations on the latter show. Vane's association of *sanguinea* with *roseicapilla* (probably based on von Boetticher's earlier work which is not available to me) is very surprising, for not only in appearance but also in voice the Galah is very different from *sanguinea* and *tenuirostris*. The material of *pastinator* in the Western Australian Museum is very poor but it shows that the southern birds, from Lake Muir, have very long bills, whereas specimens from Morawa and Yalgoo, near the northern boundary of the range, have decidedly shorter maxillae which in fact may be considered intermediate between *pastinator* and *sanguinea* (Fig 2). Bill length in Psittacidae is always somewhat variable, as the culmen continually grows throughout life, and it is through wear that the length of the maxilla is controlled. The difference between the northern and southern subspecies comes down to the fact that *tenuirostris* and *pastinator* have their maxillae less strongly curved than *sanguinea*, so that the tips escape the strong wear caused by the mandible.

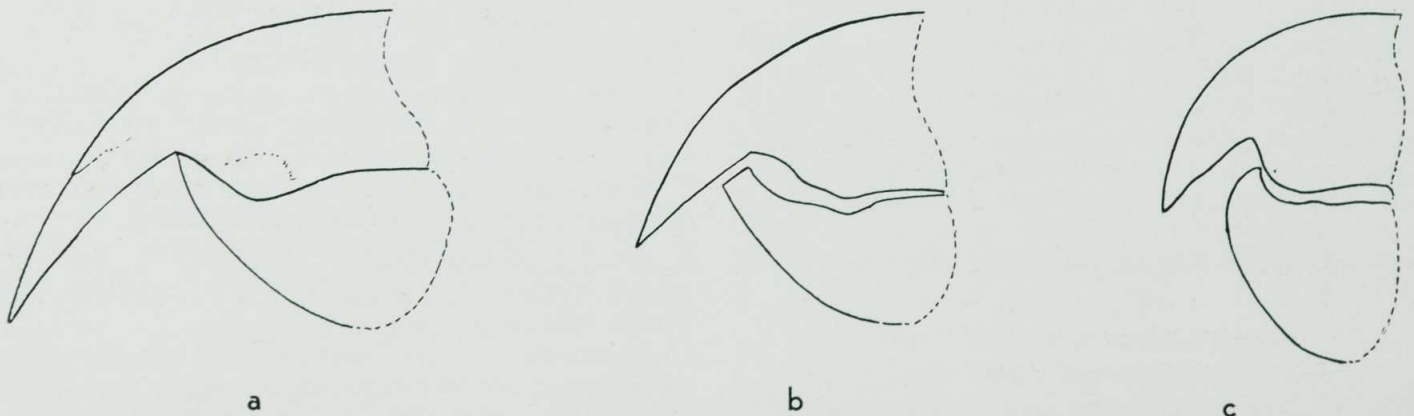


Fig. 2.—Geographic variation in bill-size in *Cacatua tenuirostris*. (a) Male, Lake Muir, 22.I.1916, WAM no. A 1163; (b) Male, Ebano, October 1904, WAM no. 6944; (c) Male, Yardie Creek Station, North-West Cape, 8.VIII.1959, WAM no. A 2378. Natural size.

The measurements of specimens in the Western Australian Museum collection are:

<i>sanguinea</i>					
sex	loc.	wing	exp. cul.	depth max.	
♂	Cardabia Creek	260	30	17½	
?	Broome	265	30	16	
?	"	263	32	17	
?	"	275	29	15½	
?	"	279	33	17	
?	"	280	35	18½	
?	"	285	34	17½	
♂	Derby	287	32	18¼	
♂	Alligator R.	272	34	17	
♂	Eureka	288	32	17	
<i>tenuirostris</i>					
?	R. Murray, Vic.	290	50	19	
<i>pastinator</i>					
♂	Lake Muir	298	45	19½	
♂	"	312	49	17	
?	Coorow	286	42½	19	
?	Morawa	297	43	17½	
♂	Ebano	—	38	18	
♂	"	296	38	18	

The figures, and comparison of specimens, show that the various races proposed by Mathews for the Northern Territory and Western Australia on size differences do not hold. Condon (1951b) accepted *ashbyi* Mathews as the race occurring in South Australia, and Mathews (1916-1917) stated that *gymnopsis* Sclater was: "based on a cage bird from unknown locality and type lost: I designate Port Essington, Northern Territory." As Sclater expressly identified two specimens from Depot Creek, S.A., with *gymnopsis* it would have been more logical to make this place the type locality. At least in Western Australia, however, I fail to find any difference in measurements between southern and northern birds. The southernmost record we have is an immature male from Mullewa, wing 275 mm, exposed culmen 27½ mm, depth of maxilla 18 mm (A 8330, leg. D. L. Serventy).

With but a single specimen of *C. tenuirostris* at hand I am unable to judge on the validity of *pastinator*, which is supposed to be a larger race with larger wing and bill, but my Victoria specimen has a larger bill than any specimen of *pastinator*, and its wing is not so very small either but falls in the range of variation of *pastinator*. In view of the fact that competent ornithologists like Gould and North accepted the validity of *pastinator*, I provisionally recognise it.

Cacatua roseicapilla roseicapilla Vieillot Galah

Cacatua roseicapilla Vieillot, Nouv. Dic. d'Hist. Nat., nouv. éd. XVII, p. 12—dans les Indes = New South Wales (Mathews) (reference copied).

Cacatoes roseicapilla assimilis Mathews, Novit. Zool. 18, 1912, p. 266—West Australia (Laverton).

Two specimens (Table XXI).

Irides pinkish red.

The Galah is plentiful in the area, usually seen in flocks of up to a hundred and (rarely) more individuals. They are seen feeding on the ground, or perched in large dead trees, or coming down to water to drink.

Discussion. Recently Mayr (1951) discussed the species, accepting as distinct the race *kuhli* from north-western Australia and the Northern Territory. The four specimens from

Derby in the Western Australian Museum differ from specimens from elsewhere by their slightly paler pinkish coloration, particularly on cheeks, throat, and middle of under parts, thus confirming Mayr's conclusions.

The specimens from the Hamersley area agree with the southern ones, and must be referred to the nominate race; perhaps specimens from New South Wales have the grey of the back on the average darker, but I agree with Mayr that this doubtful difference is not worth nomenclatorial recognition.

Barnardius zonarius occidentalis (North) Port Lincoln Parrot

Platycercus occidentalis North, Rec. Aust. Mus. 2, 1893, p. 83—Karratha Station, thirty-six miles S.W. of Roebourne, North-west Australia.

Platycercus zonarius connectens Mathews, Novit. Zool. 18, 1912, p. 274—East Murchison, West Australia.

Six specimens (Table XXII).

Irides sepia, bill pale blue-grey, legs blackish; or irides brown, bill grey horn, legs grey. None of the specimens are in moult, some are in fresh plumage, others in more or less abraded plumage.

A rather common bird, though usually seen in pairs, never in flocks.

Discussion. The race *occidentalis* is well characterized by its yellowish green upper parts, pale yellow under parts, blue feathers on the sides of the face, and small size. Birds from the Murchison belong to this race, and the name *connectens* had been rejected by Mathews (1931) himself, though it was resurrected by Cain (1955).

The Western Australian Museum has now over a hundred specimens of this species from Western Australia, which show a most interesting variation, and about which I hope to publish in future. I agree with Condon (1941) that *Barnardius* is a valid genus and should not be merged in *Platycercus* as Peters (1937) did.

Neophema elegans (Gould) Elegant Parrot

Nanodes elegans Gould, Synops. Birds Aust., pt. II, 1837 (Jan.)—New South Wales and Van Diemen's Land? = South Australia.

Nanodes elegans Gould, Proc. Zool. Soc. Lond. 5, 1837 (21 Nov.), p. 25—In terrâ Van Diemen?

Psephotus elegans carteri Mathews, Novit. Zool. 18, 1912, p. 278—West Australia (Broome Hill).

One specimen from Hooley Station collected by Mr. E. W. Parsons on 13 April 1959, and forwarded to the museum in spirits, no. A 8365.

This is a most interesting discovery as normally the species is confined to the lower south-west of the state. Mr. Parsons shot this solitary specimen from a tree near the home-stead. It is extremely unlikely that the specimen would have escaped from captivity and I consider it to be a straggler. The species is known to be increasing in numbers in the south-west.

Discussion. The race *carteri* was accepted by Peters (1937) and Cain (1955). From the National Museum of Victoria I received five specimens of *elegans* on loan, which I compared with our material from Western Australia, and

I found that the alleged colour differences between the two populations are imaginary. There is no difference in size either as the following figures of the wing-length show:

Western Australia, males: 108, 109, 111, 112, 113, 118. Victoria, three males, two unsexed: 105, 106, 108, 109, 113.

Mathews (1912*a*, 1913, 1920), Peters (1937), and Whittell & Serventy (1948) all quoted the "P. Z. S." as the original description, but as Mathews (1927, 1946) correctly pointed out, the part of the "Synopsis" in which the species is described was published earlier.

The species does not occur in Tasmania, and Gould was in doubt about the provenance of his first specimens, providing the locality Van Diemen's Land with a query. Of subsequent authors Mathews (1912*a*) changed the type locality to Victoria, later (1913, 1916-1917, 1920, 1946) to South Australia, (1927) to New South Wales; Peters (1937) followed Mathews (1912*a*) in deciding on Victoria, whereas Whittell & Serventy (1948) placed the locality "Tasmania" in inverted commas without suggesting a substitute.

Gould (1841) commented on the distribution of the species as follows: "As far as I could learn, the present species is never seen in Van Diemen's Land, . . . neither is it a common bird in New South Wales, its visits to that country being quite accidental. I found it abundant in South Australia, even in the depth of winter and I have since received its eggs from the same country, as well as from King George's Sound and Swan River".

On the other hand, the only definite locality given by Gould in the original description was New South Wales, but until 1836 New South Wales included South Australia. Gould would probably not yet have been able to consider the foundation of South Australia as a separate state in a paper published in January 1837. Therefore I believe it justified to accept as restricted type locality South Australia.

In this connection I would like to point out that the mention of Victoria by Mathews (1912*a*) does not appear to be a valid restriction, whereas his 1913 publication, where South Australia is definitely substituted, constitutes the first valid restriction of the type locality.

Melopsittacus undulatus (Shaw)

Budgerygah

Psittacus undulatus Shaw, Nat. Miscell. XVI, 1805, pl. 673—New South Wales (reference copied).

Five specimens (Table XXIII).

Irides white, legs blue-grey. None of the specimens shows moult, the outer primaries are slightly abraded.

Several flocks were present at Tambrey.

Discussion. According to Mayr (1951) the species shows no geographical variation.

Cuculus pallidus (Latham)

Pallid Cuckoo

Columba pallida Latham, Index Ornith., Suppl., 1801, p. lx—New South Wales (reference copied).

H [eterocenes] occidentalis Cabanis & Heine, Museum Heineanum IV (1), (1862-63), 1864, p. 27—Westaustralien.

Two specimens (Table XXIV).

Irides brown or sepia, eyerim dark yellow, bill black, basal half of mandible greyish yellow or dirty yellow-brown, legs brown-grey, soles yellow-brown, inside of mouth red-orange. Plumage fresh, no moult.

Fairly common in half open country. The birds were singing.

Discussion. There is no difference in size between specimens from Western Australia and New South Wales, and no difference in colour or colour-pattern either.

Chalcites basalis (Horsfield)

Bronze Cuckoo

[*Cuculus*] *basalis* Horsfield, Trans. Linn. Soc. Lond. 13, 1821, p. 179—Java.

One specimen (Table XXV)

Irides grey, bill brown, legs dark brown, weight 18 g, no moult, plumage slightly abraded.

Apparently rare, I have seen only one very shy specimen (at Tambrey on 5 August). The specimen listed was taken by Mr. Buller.

Ninox novaeseelandiae subsp.

Boobook Owl

Two specimens (Table XXVI).

Irides greyish green, bill blue-grey, tip and tomia dark horn grey, legs light blue-grey.

The Boobook Owl was apparently fairly common near Millstream and Tambrey where it was repeatedly observed; no. A 8361 was taken from a crevice in the rocks, no. A 8362 from a tree.

These specimens are most interesting; A 8362 is very pale, and perfectly agrees with a specimen from Meda, Kimberley Division, in our collection, and therefore with *arida* Mayr. Specimen A 8361, on the other hand, is very dark, it is streaked, not ocellated, on the under surface, and the streaks are even darker, bolder than in New South Wales specimens. A specimen from Coolawanyah in our collection is almost exactly intermediate between these two, whereas a skin from Marble Bar is identical with *arida*. Incidentally, Mayr (1943, p. 17) mentions a specimen from Marble Bar which is not typical of *arida*.

Evidently the situation needs clarification and therefore I do not, for the moment, assign a subspecific name to my material.

Partial revisions of *Ninox novaeseelandiae* were undertaken by Mayr (1943) and Condon (1951*b*), but because of lack of time and adequate material these authors had to leave the status of the populations of the central and southern parts of Western Australia unsettled.

Apparently no two authors agree as to how many races should be recognised, and by what they differ. Though I was mainly concerned with applying the correct name to the Western Australian owls, it appeared impossible to do this without some revisional work. Loans of material from the South Australian Museum and the National Museum of Victoria, mainly from the southern half of Australia, enabled me to arrive at a conclusion rather different from any arrangement hitherto proposed. With the material of the Western Australian Museum, about 110 specimens were examined. Practically

no material from Queensland and from western South Australia or eastern Western Australia has been available.

The following races appear to be recognisable in the southern half of Australia.

1. *Ninox novaeseelandiae leucopsis* (Gould)

[*Athene*] *leucopsis* Gould, Proc. Zool. Soc. Lond. 5, (1837), 25 May 1838, p. 99—Van Diemen's Land.

[*Noctua*] *Maculata* Vigors & Horsfield, Proc. Linn. Soc. Lond. 15, (1826), 1827, p. 189—Australia, no precise locality given (preoccupied).

Spiloglaux boobook clelandi Mathews, Aust. Avian Rec. 2, 1913 (29 Dec.), p. 74—Flinders Island.

Spiloglaux novaeseelandiae tasmanica Mathews, Aust. Avian Rec. 5, 1917 (21 July), p. 70—Tasmania.

Diagnosis. A very well-marked race, easily recognised by its small size, dark upper parts with usually many small white dots on the upper surface, especially on the neck, and strongly ocellated under surface.

Distribution. Tasmania and probably islands in the Bass Strait. This race is so distinct that I have no hesitation in referring two birds collected in southern Victoria (Queenscliff, and University grounds, Melbourne) to it. Since I have also examined a specimen "caught at sea 50 miles off the Hunters" in May 1906, I have no doubt that the Tasmanian race is at least partly migratory, which accounts for its occurrence in Victoria. Whether or not it is a resident on the islands in Bass Strait I am unable to say.

Discussion. Mathews (1912*d*) rejected *Athene leucopsis* Gould as a nomen nudum and stated it to be "probably *Strix cyclops* Gould", subsequently (1931) listing *Athene leucopsis* "Mathews", with *Strix cyclops*, as a synonym of *Tyto n. novaehollandiae*. Neither the fact that this form does not occur in Tasmania, nor the fact that Gould expressly associated his *Athene leucopsis* with the genus *Athene* (= *Ninox*) and not with *Strix* (= *Tyto*) deterred Mathews from this blundering.

Anyway, *Athene leucopsis*, as published by Gould, is not a nomen nudum as Peters (1940) correctly pointed out. Gould's description (1838, p. 99) reads as follows:

"Four species of this genus [*Athene*] are now on the table, the two largest of which are new to science. For the largest I would propose the name of *Athene strenua*, and for the other that of *A. fortis*. The third has been characterised by Messrs. Vigors and Horsfield as the *Noctua Boobook*, and the *Noctua maculata* of these gentlemen seems to be identical with it. For the fourth and last species of the genus, which is from Van Diemen's Land, and which is evidently distinct from either, I propose the name *leucopsis*, from the white colouring of its face. The species of the genus *Strix* which I have called *delicatus* [error for *delicatus*], together with my *Strix cyclops* and *Strix castanops* and the *Strix personata* of Messrs. Vigors and Horsfield, may be said to be closely allied, but distinct species".

The remark about the white colouring of the face validates the name *leucopsis*, whereas from the preceding lines can be inferred that it is a small form. The reason that Gould never republished this name is evidently because he

realised its identity with *Noctua maculata* Vigors & Horsfield. In his later publications Gould always mentioned the white face in his descriptions of *maculata*.

2. *Ninox novaeseelandiae boobook* (Latham).

Strix boobook Latham, Index Ornith., Suppl., 1801, p. xv—New South Wales (reference copied).

Athene marmorata Gould, Proc. Zool. Soc. Lond. 14, 1846, p. 18—South Australia, here restricted to Adelaide.

Spiloglaux boobook leachi Mathews, Aust. Avian Rec. 2, 1913, p. 74—Victoria, restricted to East of Melbourne by Mathews (1915-1916, p. 326).

Spiloglaux boobook tregellasi Mathews, Aust. Avian Rec. 2, 1913, p. 74—Frankston, Victoria.

Diagnosis. A large subspecies which shows some variation in coloration. The darkest extreme, which has been described as *marmorata*, is dark, upper parts only slightly less dark than in *leucopsis* (which race is slightly more chestnut brown); white dots on head and neck, when present, larger, more vaguely defined, than in *leucopsis*. Under surface rather cold brown, more often ocellated than striated. The more typical *boobook* has generally somewhat paler, warmer brown, upper parts, and the under surface in these lighter birds is more often striated than ocellated.

Distribution. The whole of Victoria and New South Wales, southern Queensland, eastern South Australia and southern Northern Territory.

Discussion. There is a certain amount of variation in the range of this race. Dark individuals are found in southern, coastal Victoria, and in the adjacent part of South Australia, whereas specimens from interior localities tend to be somewhat paler. Originally I even thought that it would be possible to distinguish dark individuals as a separate race *marmorata*, but, though there is no doubt that dark specimens are predominant in the area just indicated, rather dark individuals occur also near Sydney (Manly) and even in interior New South Wales, whereas a specimen from Kew, Melbourne, is definitely of the browner *boobook* type. Six specimens from Adelaide belonged evidently to the paler *boobook* type, but three others from the same area (Adelaide, Mile End, Mt. Barker) are darker. It is evident therefore that no discrete geographical area can be assigned to the darker birds, so that it is impossible to regard them as a separate race. Also, though the extremes are fairly distinct, the great majority of individuals are to a varying degree intermediate.

There is in my mind no doubt that the name *marmorata* applies to dark individuals of this race. *Athene marmorata* was described as being: "Nearly allied to *Athene maculata* [= *leucopsis*], but much exceeding that species in size", to which Gould later (1848) added: ". . . much larger than *A. maculata*, but so nearly to, and so much like that species, that I have not thought it necessary to give a separate figure of it". Accordingly I restrict the type locality to Adelaide, where such dark specimens are known to occur.

Mathews's names *leachi* and *tregellasi* are hardly worth comment. The first of these alleged races was described as differing from *maculata* (= *leucopsis*) in its larger size (no comparison

was made with *marmorata*, which was separated from *maculata* on exactly the same character), the second as differing from *marmorata* in its much darker general coloration. Differences between these two alleged new races were not given. The type locality of *leachi* was given as Victoria, that of *tregellasi* as Frankston, Victoria. Two years later Mathews (1915-1916, p. 326)—quoting the original descriptions and, incidentally, falsifying the quotation by these additions—precised the type localities to: "Victoria (East of Melbourne)" for *leachi* and "Frankston, Victoria (North of Melbourne)" for *tregellasi*. It remains only to be said that Frankston is not north of Melbourne, but due south of it on the coast.

It is surprising how, after all this, Mathews (1915-1916, p. 314) could pronounce that: "The typical locality of 'boobook' being New South Wales, comparisons must be made with birds from that locality".

3. *Ninox novaeseelandiae halmaturina* Mathews.

Ninox boobook halmaturina Mathews, Novit. Zool. 18, 1912, p. 254—Kangaroo Island.

Diagnosis. A dark subspecies. Differs from neighbouring dark races by the coloration of the under surface which is striated to ocellated very dark brown, interspaced not with whitish but with rufous cinnamon, a colour also very distinct on the feathers of the legs.

Distribution. Kangaroo Island off the coast of South Australia.

Discussion. This race was synonymized with "*marmorata*" by nearly all recent authors, including Mathews himself. Only Condon (1951b) gave it the benefit of the doubt. My opinion is based on the same two specimens Condon had, but I think that not the dark back and the rather small size are the crucial characters but the colour of the under parts, and as far as one can judge on the basis of two specimens only, *halmaturina* is a valid race.

4. *Ninox novaeseelandiae rufigaster* nova subspecies

Diagnosis. A well-marked race (as already correctly observed by Serventy 1932), which differs from *boobook* by being more rufous underneath: whereas in the eastern specimens the feathers of the undersurface are brown with white edgings, those from the south-west have them brown, outwards gradually changing in rufous and then in white. The size is smaller on an average. The uniformity in the series is remarkable, and among the seventeen specimens examined there is not a single aberrant individual. This uniformity is an additional argument for separately naming the population.

Distribution. South-western Australia, north to Point Cloates and Glen Florrie (Ashburton River).

Type. ♀, 19.VIII.1916, Perth, received from Messrs. Boan Bros. WAM no. A 1022.

Discussion. Whittell & Serventy (1948), probably following Peters (1940), included the birds from the south-west with *marmorata*, and subsequently Condon (1951b) paid attention to these owls; he had not enough material to judge

the validity of the south-western race, but suggested: "that it may eventually be proved that south-western birds are separable under the name *parocellata*".

The names proposed by Mathews now need attention. As Mathews confused this subspecies with *ocellata*, this population long escaped his notice, but in 1946 he proposed "*S[piloglaux] b[ooobook] parocellata* nov. South West Australia. Described Birds of Australia Vol. 5, p. 331, as *S. ocellata* Bonaparte", and "*S[piloglaux] o[cellata] carteri* nov. Mid West Australia. A slightly smaller form of *ocellata*".

The reference under *parocellata* brings us to a description in which the only bird specifically mentioned by Mathews as having been examined by himself is the type of *ocellata*, though quoted from Ashby appear some remarks on a specimen shot at Bayswater near Perth. The description is therefore a composite one, based partly on the type of *ocellata* (which Mathews thought came from Perth) and partly on the specimen from Bayswater. As first reviser I select as type specimen of *parocellata* the type of *ocellata*, which makes the first an objective synonym of the second.

No explanation is given either of the abandonment of the name *novaeseelandiae*, the use of which Mathews propagated in his earlier publications, or of the splitting of the Boobook Owl into two species (*boobook* and *ocellata*), so probably there is no explanation but Mathews's well-known urge for change and nomenclatural upheavals, and it is of little use to comment on this, or on his earlier (1931) classification in which he split the various races into three species, retaining, however, the name *novaeseelandiae* for one of them.

The name *carteri* should probably be rejected as a nomen nudum; I fail to see that the remark that it is "a slightly smaller race of *ocellata*" is a description. If Mathews had written: "smaller than *ocellata*", it might have been acceptable, but as it is now, he does not say what his *carteri* is smaller than (the specimens from the mid-west of Australia are not smaller than those of the north, north-west, and south-west). Actually I strongly suspect that *carteri* is a hypothetical subspecies, not based on actual examination of specimens, but launched just in case the mid-west of Australia might in future be found to be inhabited by a separable population. However, in case doubt might arise as to whether or not *carteri* is a nomen nudum, I restrict the type locality of *carteri* to Marble Bar and propose as neotype the specimen in the Western Australian Museum, no. 9518 (♀, 21.V.1908, Marble Bar) which makes it a synonym of *arida*. Marble Bar is in the north-west of Western Australia, but in the mid-west of Australia as understood by Mathews and thus within the area given as range of *carteri*. The fact that Mathews included *carteri* with his northern species *ocellata* and not with his southern *boobook* may be considered a further proof that *carteri* was intended for pale northern birds and not for dark southern birds by those who take his "description" seriously.

If the name *parocellata* had ever been used to any extent in literature for the form of the south-west, I would have maintained it for that race, but in view of the general inadequacy of the description, and also as the Bayswater specimen mentioned must have been lost with the Ashby collection, I feel that it is much more satisfactory to describe the form of the south-west as a new race, of which the characters have been given above, and a type specimen is available. This course seems particularly justified as the Bayswater specimen was regarded by Mathews as of a variety observed in rare cases.

5. *Ninox novaeseelandiae arida* Mayr.

Ninox novaeseelandiae arida Mayr, Emu 43, 1943, p. 16—Fitzroy River, five miles south-west of Mt. Anderson, West Kimberley District.

?*Ninox ooldeaensis* Cayley, Emu 28, 1929, p. 163—near Ooldea, South Australia.

S[*piloglaur*] o[*cellata*] *carteri* Mathews, Working List Aust. Birds, 1946, p. 55—Mid West Australia, herewith restricted to Marble Bar.

Diagnosis. The palest of all races. Upper parts tawny olive (Ridgway 1912, pl. XXIX), with some large whitish spots on the wing coverts; under parts very pale, on many feathers only the shafts being brown, the remainder of these feathers being pale buffish or white.

Distribution. West Kimberley Division, also Pilbara District.

Discussion. Whether or not this is a true geographical race remains to be decided; doubtless typical birds, as described above, are very pale, but Mayr (1943) has observed that some specimens from Roebuck Bay, not far from the type locality of *arida*, were much darker. The same pertains to the material from Tambrey, whence (as stated above) one specimen is a typical *arida*, whereas the other specimen is dark. One specimen from Coolawanyah and one from Barromine are intermediate, and one from Marble Bar agrees with *arida* (this is the specimen proposed as neotype for *carteri*). Evidently the status of *arida* remains in need of clarification.

Ninox ooldeaensis Cayley has been placed in the synonymy of *marmorata* by subsequent authors (Peters 1940), but Cayley's (1929) coloured plate makes it evident that it has nothing to do with that form, and is very close to, if not identical with, *arida*. Unfortunately the types of *Ninox ooldeaensis* and *Ninox yorki*, stated by Cayley to be in the Australian Museum, cannot now be found (Keast, in litt., 14.VIII. 1959).

In view of the remoteness of the type locality of *ooldeaensis* from that of *arida* I consider it advisable not to replace the name *arida* by the older name *ooldeaensis* until the type specimen of the latter may turn up and a direct comparison may confirm the supposed synonymy.

Measurements.

N. n. leucopsis

Tasmania	.....	♂: —
		♀: 203, 206, 210
		? : 203, 203, 217
King Island	.....	♂: 198
Victoria	.....	♂: 219
		? : 211

N. n. boobook

South Queensland	♂: 233
	♀: 251
New South Wales	♂: 238, 240, 243, 244, 244, 248, 250
	♀: 228, 243, 246, 257, 258, 261
	? : 235, 240, 245, 245, 252, 252
South Australia	♂: 230, 234, 235, 240, 241, 243, 247
	♀: 227, 231, 235, 236, 240, 241, 246
	? : 249, 252
Central Australia	♂: 233
	♀: 233, 234, 242, 249
	? : 233

N. n. halmaturina

♂: 226
♀: 236

N. n. rufigaster

♂: 215, 215, 219, 227, 233
♀: 226, 228, 228, 229, 230, 230, 231, 236, 237
? : 227, 230, 231

N. n. arida and specimens of doubtful subspecific identity of the Pilbara District.

Meda	.....	? : 223
Marble Bar	.....	♂: 230
Barromine Stn.	.....	♂: 231
Coolawanyah	.....	♂: 239

***Aegotheles cristatus cristatus* (J. White)**

Owlet Nightjar

Caprimulgus cristatus J. White, Journ. Voy. New South Wales, 1790, p. 241—New South Wales.

Two specimens (Table XXVII)

Specimen no. A 8379 has much rufous on head and breast, specimen no. A 8380 has very little rufous.

Discussion. Many races have been described, and even comparatively conservative authors as Whittell & Serventy (1948) and Serventy & Whittell (1951) recognise as many as four races for Western Australia alone.

In order to get some insight in the geographic variation of the species I examined the material from the Western Australian Museum and the National Museum of Victoria, and some specimens from the Queensland Museum, about 60 skins altogether. These included series from different parts of Western Australia, Victoria, and New South Wales, and odd specimens from South Australia, Northern Territory and Queensland. No material from either Tasmania or New Guinea was available. The following characters were examined.

1. Size. No appreciable differences in size occur anywhere in Australia. The measurements given by Rand (1938) show that the New Guinea subspecies, described as being of large size, is well founded.

2. Rufous tone of the feathers. This is a point that has caused more controversy and confusion than any other character because of its great variability. From the material at hand it is evident that the amount of rufous can vary considerably in one population, but on the other hand there is also a distinct geographical trend, as will be discussed below.

3. Colour of upper parts. These are either darker, more blackish, or paler, more sand coloured.

4. Under parts. The extent of dark freckling, which may cover practically the whole under surface, or is confined to the upper breast.

5. Barring of the tail has sometimes been used as a basis for nomenclatural separation, but I found this character to be very variable in specimens belonging to the same population, and it is apparently not of any use, notwithstanding Mathews's (1918-1919, p. 67) allegations to the contrary.

Even though the material is not nearly sufficient for determining all variation, it is evident—as is to be expected in a species with a continuous distribution—that such geographical variation as exists must be gradual and therefore is difficult to express in nomenclature.

Specimens from south-western Australia are very dark above, and dark below, the dark freckles of the under surface extending right down to the vent. None of the 16 specimens shows any trace of rufous in the plumage. To the north and north-east the plumage is similar, but some rufous becomes evident. Specimens from Dalwallinu, Kondinin, Messengers Patch and Coorow have already some rufous on cheeks and collar. A specimen from Naremben, has only the vaguest trace of rufous whereas a specimen from as far north as Cue shows no rufous at all, and agrees with material from the south-west, though it is, like one skin from Dukin, slightly greyer, less blackish above.

Specimens from East Murchison, and north to West Pilbara, are all somewhat lighter, greyer, both above and below (the extent of freckling being reduced) and have always some rufous; a few individuals are in the rufous phase.

Material from Victoria is very close to that from south-western Australia, but 8 out of 12 birds show some rufous, the upper surface averages in series very slightly paler, and the freckles of the under surface are not continued as far down to the vent. These birds are indistinguishable from the specimens mentioned above from the northern part of the south-west (Dalwallinu, Coorow). Material from South Australia and New South Wales fits in with this series, though specimens from interior New South Wales may be slightly paler, greyer above. A specimen from 12 miles south of Charleville, Queensland, agrees with specimens from New South Wales, as do specimens from Proserpine, Dubolla near Rathdowney, south-eastern Queensland, and Charters Towers, mid-eastern Queensland.

Specimens from the Kimberley Division are very different; the upper surface is not blackish but more sand colour, and on the under surface the freckles are very much reduced in number and extent, being confined to the upper breast. A specimen from Cooper's Creek agrees with these specimens in colour of the upper parts, but the freckles of the under surface are more extended. One of the specimens is in the rufous phase.

As regards nomenclature, excluding the populations of Tasmania (*tasmanica*) and northern Queensland (*olivei*), about which I can have no opinion, I believe that the variation described above justifies the recognition of two races.

1. *Aegotheles cristatus cristatus* (J. White). South-west and mid-west Australia, South Australia, Victoria, New South Wales and south Queensland, perhaps also north Queensland. Greyish to blackish above, many freckles below.

2. *Aegotheles cristatus leucogaster* Gould. Northern Territory and Kimberley Division. Sand-coloured (brownish) above, freckles below confined to upper breast. Usually with some rufous coloration.

The rufous phase of the northern form *leucogaster* was described as *rufa*, a name accepted by Mathews (1931), and by Whittell & Serventy (1948), who give it a range: "from southern part of Kimberley Division to the Ashburton River (possibly still farther south), and into Central Australia". Their opinion on the validity of the race is probably based on Mathews's published writings and on two very rufous specimens from the Ashburton river in the collection of the Western Australian Museum. However, in our museum's collection is a specimen from Derby, the type locality of *rufa*, which has no rufous at all and, together with the slightly rufous Mt. Herbert and Tambrey specimens, shows conclusively that there is not such a thing as a rufous race but that these specimens have been correctly considered a rufous phase. A specimen from 100 miles east of Wyndham (Nat. Mus. Victoria), represents the rufous phase of the race *leucogaster* in the material examined.

In many publications the authorship of this and other species described in White's Journal (1790) is ascribed to Shaw. In my opinion this is not justified, for nowhere in that book appears the slightest intimation that White is not fully responsible. Certainly the fact that in the introduction White acknowledges assistance from Shaw and others is not enough to deprive him of authorship!

***Eurostopodus guttatus* subsp.**

Spotted Nightjar

Three specimens (Table XXVIII).

No moult, plumage slightly abraded.

The material available to me is insufficient to discuss the variation of this species.

***Dacelo leachii leachii* Vigors & Horsfield**

Blue-winged Kookaburra

[*Dacelo*] *leachii* Vigors & Horsfield, Trans. Linn. Soc. Lond. 15, (1826), 1827, p. 205—no locality, ex Latham Gen. Hist. IV, p. 11 no. 2: Keppel Bay, Queensland.

Dacelo leachii cliftoni Mathews, Aust. Avian Rec. 1, 1912, p. 37—Carnarvon, West Australia.

Three specimens (Table XXIX).

Irides white, bill dirty white, legs grey. None of the specimens shows moult.

Fairly common in the forest along the Fortescue River. Curiously all the specimens I observed were in the blue-rumped male plumage.

Discussion. Keast (1957b) recognised the race *cliftoni* for the Hamersley area stating that: "This is a distinctive isolate, readily recognisable by its white head. The presence of one or two 'pale-headed' birds in the Derby series indicates that there is a slight intrusion of Hamersley genes to the north", and on another page once more: ". . . there are two good isolates (*cliftoni* and the New Guinea *intermedia-superflua*) . . ."

Personally, I can find little difference between Hamersley and Kimberley specimens. My material consisted of: north-west, 5 ♂ ad., 1 ♂ subad.,

3 ♀; Kimberley Division, 3 ♂, 4 ♀; Northern Territory, 1 ♂, 2 ♀; Cairns, northern Queensland, 2 ♀.

The majority of specimens from the north-west (7 out of 9) have pale heads, but 3 out of the 7 Kimberley specimens also belong in this pale headed series (♀, Fitzroy River, 180 miles from Derby, very pale; ♂, same, 200 miles from Derby; ♂, Ord River). The specimen from the Ord River shows that the pale head in the Kimberley Division is not confined to the Derby area where hybridization with southern birds might be expected to occur.

A female from the Ord River, collected at the same place as the male, on the other hand, is the darkest of the whole series. The two remaining specimens from the north-west are as dark on the heads as the dark ones of the Kimberley series, particularly a specimen from Carnarvon (♂ subad.), the type locality of *cliftoni*. The three Northern Territory birds have dark crowns, but the skins from Cairns, Queensland, are slightly paler and agree with the specimen from Carnarvon just mentioned. Specimens from the north-west are on an average slightly darker buff on the under surface than those from the Kimberley Division, but a specimen from Nullagine is as pale below as the palest skins from the Kimberleys. It seems therefore inadvisable to maintain any races on the basis of colour distinctions.

The measurements are as follows.

North-West—

♂: 195, 204 ♂ subad.: 186 ♀: 201, 202, 202 +

Kimberley—♂: 190, 193, 194 ♀: 192+, 193, 195, 198

Northern Territory—♂: 195 ♀: 190, 194

Cairns, Queensland—♀: 193, 198

There is therefore a difference in size between specimens of the north-west and those from northern Australia. But according to Keast specimens from southern Queensland are even larger (wing 204-216 mm), whereas for Cairns he gives 197-206. It seems that slight differences in average size exist between various populations, but that certainly no clear-cut distinctions can be made, and therefore I prefer to include all these populations (also *cliftoni*) with the nominate race.

Halcyon pyrrhopygia Gould

Red-backed Kingfisher

Halcyon pyrrhopygia Gould, Birds Aust. II, 1840, pl. 22—the lower Namoi.

Four specimens (Table XXX)

Irides sepia, bill black, lower part of mandible dirty white, legs dark grey to blackish. None of the specimens shows moult; Nos. A 8056 and A 8059 are in fresh plumage, the other two slightly abraded. The juvenile is palest underneath, A 8058 is very ferruginous on the under surface, and the other two specimens are intermediate. The males have on the wings a distinct violet gloss, which is absent in the females.

The species is well distributed and fairly common in dry open forest. Usually seen solitary.

Discussion. As Keast (1957b) has shown there is no geographic variation in the species. De Schauensee (1957, p. 179) lists the type specimen under a trinomial, but gives no reasons for doing so.

Merops ornatus Latham

Australian Bee-eater

Merops ornatus Latham, Index Ornith., Suppl., 1801, p. xxxv—New South Wales (reference copied).

Merops ornatus shortridgei Mathews, Novit. Zool. 18, 1912, p. 290—Westralia (Strelley River).

One specimen (Table XXXI)

Irides red, bill black, legs dark grey. No moult, plumage very fresh.

Not common, a few specimens were regularly observed near the Fortescue River, and one was seen on 11 July, at Goola Lake, Roy Hill Station.

Discussion. The differences in coloration which Mathews (1912a) claimed to exist between specimens from New South Wales and Western Australia are imaginary and there is no difference in measurements either.

Mirafrja javanica woodwardi Milligan

Bush Lark

Mirafrja woodwardi Milligan, Vict. Nat. 18, 1901, p. 18, 26—Onslow, Western Australia.

Five specimens (Table XXXII)

Irides brown, bill, maxilla and tip mandible horny black, remainder of mandible pale brownish, legs flesh colour. All specimens are in fairly fresh plumage, no moult; the gonads were in different stages of development. The female differs from the males by the almost unspotted breast.

Only found on the large flats covered with short soft grasses, where these larks were quite common, but the occurrence of this habitat itself is very patchy. During our stay, the birds were in full song. My observations on the rainy 30th of July were particularly interesting. At my arrival it was dry, and many larks were singing high up in the sky; after a while it started to rain, and the song altogether stopped, the birds coming down to earth. When the rain lessened (but did not stop) song recommenced, but this time the singing birds did not ascend, but remained perched in the tops of trees and scrubs. Of course it is not unexpected that the curious and specialised song-flight would be impaired by rain.

Discussion. These specimens agree with the type of *woodwardi* in the collection of the Western Australian Museum. As Mr. McEvey of the National Museum of Victoria has recently worked over our material and will soon publish a revision of the species, I refrain from further comment.

Petrochelidon nigricans neglecta Mathews

Australian Tree-martin

Petrochelidon nigricans neglecta Mathews, Novit. Zool. 18, 1912, p. 301—North-West Australia, precised as Fitzroy River by Mathews (1920).

Petrochelidon nigricans distinguenda Mathews, Novit. Zool. 18, 1912, p. 301—West Australia (East Murchison).

Four specimens (Table XXXIII)

Irides brown-sepia, bill black, legs dark grey. None of the specimens shows moult. Nos. A 8260 and A 8262 have wide white edges to the secondaries, which are practically absent in the two other specimens, and are also much less glossy on the back; probably a sign of immaturity.

These swallows were somewhat local in occurrence, for the only place where I saw them was at Tanberry Creek, Tambrey Station, on August 1st. There they were quite common, and apparently breeding as two specimens continuously flew in and out the hollow end of a broken dead branch of a gum-tree. Several times I saw specimens drink in flight.

Discussion. The race *neglecta* was described as follows: "Differs from *P. n. nigricans* in its slightly smaller size and duller coloration above, especially on head and back."

Additional specimens from Western Australia in our collection have the following wing-measurements:

♂ Lake Dundas 103, ♂ South Perth 101, ♂ South Perth 100, ♂ Mongers Lake 101, ♀ Mongers Lake 100.

Specimens from New South Wales and South Australia in our collection measure: 0? Orimba 106, ♀ Gosford 105, 0? Adelaide 111.

Additional specimens from New South Wales received on loan from the Australian Museum, Sydney, measure:

♀ Glanmoir, Bathurst 108, ♀ Petersham 110, ♀ Hay 108, 0? Copmanhurst 110, 0? Colo Vale (plumage strongly abraded) 104.

These measurements show that there is a definite difference in size between specimens from New South Wales and specimens from Western Australia (as correctly stated by Mathews); I do not see a difference in coloration above, but, though my specimens from New South Wales are all old and doubtless discoloured, I suspect that this character is invalid and that Mathews's specimens of *neglecta* were immature. Gould (1842), long ago wrote: "The Van Diemen's race are larger in all their measurements . . . than . . . those killed in New South Wales; individuals from the latter locality again exceed in size those from Western Australia."

As specimens from Day Dawn, Perth, etc. do not differ in colour from those of Tambrey and Millstream, *distinguenda* enters the synonymy of *neglecta*. Admittedly I have not seen topotypical material of *neglecta*, but Mathews (1919-1920, p. 50) described a female from West Kimberley as having a wing of 101 mm, which thus agrees with my material. It is interesting to note the absence of a size gradient in Western Australia. Since writing the preceding lines I have received a photocopy of White's (1936) paper. Apart from the fact that I have preferred to use the name *neglecta* rather than *distinguenda*, my classification agrees with that proposed by him.

Mathews (1919-1920) commented on the absence of generic characters of the monotypic genus *Hylochelidon*, nevertheless using this name. Mayr & Bond (1943) placed the species in the subgenus *Petrochelidon* of their genus *Hirundo*. As I do not believe in the use of subgenera, I retain *Petrochelidon* as a genus, an opinion to which, incidentally, Dr. Bond has also reverted (Bond 1956).

Anthus novaeseelandiae australis Vieillot

Groundlark

Anthus australis Vieillot, Nouv. Dict. d'Hist. Nat., nouv. éd. XXVI, 1818, p. 501—Sydney, New South Wales (reference copied).

Five specimens (Table XXXIV)

Irides sepia, bill: maxilla and tip mandibula dark grey (horn), mandibula and tomia maxilla bluish white, legs pale brownish flesh.

Common and widely distributed in open country.

Discussion. I have examined and measured all our material from Western Australia, 63 specimens, and found no geographical variation in size. There is a great range of individual variation in colour, some specimens being very rufous—specimen No. A 8081 from Lake Goola, Roy Hill Station, is an extreme in this respect—but this variation is individual rather than geographical. Hence I agree with Whittell & Serventy (1948, p. 98-99) who have placed *bilbai* Mathews, *subaustralis* Mathews, *subrufus* Mathews, *montebelli* Montague, and *hartogi* Mathews in the synonymy of *australis*.

Lalage sueurii tricolor (Swainson)

White-winged Triller

Ceblepyris tricolor Swainson, Zool. J. 1, 1825, p. 467—Australia (reference copied).

Two specimens (Table XXXV)

Male, irides pale brown, bill black, legs black; female, irides dark brown, bill black, basal two-thirds of mandible yolk-yellow, legs black. Specimen No. A 8112 is a male in change, though it shows no moult in primaries and rectrices, which are new; specimen No. A 8113 shows no moult, the tail is strongly abraded, the wings are slightly abraded.

Only observed in some not very dense scrub country close to the Millstream Homestead.

Discussion. Our material confirms the conclusions of Mayr (1940) and Keast (1958g) that this species shows no geographical variation within Australia.

Coracina novaehollandiae subpallida Mathews

Black-faced Cuckoo-shrike

Coracina novaehollandiae subpallida Mathews, Novit. Zool. 18, 1912, p. 326—North-West Australia, precised as Strelly [=Strelley] River by Mathews (1921-1922).

Coracina gascoynensis Ashby, Emu 29, 1930, p. 190—Jerrynew Creek or Jacob's Creek, Gascoyne River.

Five specimens (Table XXXVI).

Irides dark sepia-brown or very dark brown, bill black, legs dark grey to black, colour of testes dark slate (very few species of birds have the testes pigmented).

The immature male is in the *gascoynensis* plumage, with the black restricted to the lores, and with a pale throat; this specimen is in strongly abraded plumage, no moult. The other specimens are in fairly fresh plumage, with only their tails somewhat abraded.

Widely distributed and common wherever there are trees. Nearly always seen in pairs, but sometimes several together.

The race *subpallida*, confined to the north-west differs from all other forms by its paler grey mantle. Though the difference from other

populations is not very striking, it is quite constant and every single individual can be picked out on the basis of this character. Mathews (1912a) incorrectly included the Kimberley Division and the Northern Territory in the range of *subpallida*.

Keast (1958g) has revised the species but as my conclusions differ somewhat from his, I give a full discussion of all the material in the Western Australian Museum.

First I want to point out that if it is correct to recognise a separate race for the northern part of Australia, this should not bear the name *didima* Mathews (1912b) but should be known as *connectens* Mathews (1912a), type locality Inkerman, Queensland, which has priority. This bird was described as slightly smaller than *novaehollandiae* (though Mathews did not give a single measurement) and therefore probably belongs to the northern population, and is not a migrant from the south where specimens average slightly larger (cf. Keast 1958g, Table I). It is nowadays custom to name specimens collected in New Guinea, Timor, Soemba, and the Moluccan Islands *didima* (Mayr 1941b, Mayr 1944, van Bemmelen 1948, Gyldenstolpe 1955).

However, I do not consider it advisable to recognise a northern race at all. Keast claims that the specimens of the south-west have small bills, and that those from the north, including the Kimberley Division, are large-billed, and his figure 1 gives an exaggerated picture of this, showing the Kimberley bird with a bill of at least twice the bulk of the south-west bird. My measurements show that the difference in bill-size is slight.

No. of specimens	Location	Ent. cul.	Exp. cul.	Cul. nostr.
14	S.W.A.	25-30 (27.1)	20-23 (21.3)	16-19 (17.6)
5	Kimberley Division and N.T.	27-32½ (29.7)	22½-25 (23.5)	18-20 (19.3)
1	N.S.W.	29	24	19

I cannot possibly consider this difference in average size of the bill to be of subspecific value, particularly as one sees the great variation in bill size (not only length, but also width and depth) in birds from the same region. Therefore I include the birds from the northern half of the continent in *melanops*.

The objection might be made that some of the Kimberley birds I measured may have been migrants from the south. The migrations are still far from well known, and the last word about them has certainly not yet been spoken or written. But there is the evidence that neither Keast nor I found any specimens of *melanops* in the range of *subpallida*, and that, on the other hand, we never found a specimen of *subpallida* outside its accepted breeding range. This strongly points to these populations being largely sedentary.

The specimens not rarely recorded from the Lesser Soemba Islands, Moluccas and New Guinea have always been considered migrants from Australia, and it is custom to call them *didima*, thus identifying them with populations

from northern tropical Australia. This again, is very unlikely; migrants would be expected to belong to the southernmost populations of the species (Tasmania, southern Australia), but never to the northern tropical populations. On the other hand Tubb (1945) found specimens attending fledglings near Port Moresby which suggests that *C. novaehollandiae* is not a migrant but at least partly a resident in southern New Guinea, and links it up with the populations of northern Australia.

Certainly the measurements of the specimens recorded from New Guinea (Mayr & Rand 1937, p. 100; Junge 1939, p. 4; Gyldenstolpe 1955, p. 269) are rather small, none reaching 200 mm; actually they are lower than those of any specimens measured by Keast, but as Junge states, many specimens are very worn which explains the small wing measurements.

I have not seen adequate material from Tasmania, but at least the differences in measurements between Tasmanian and Australian specimens as tabulated by Keast, seem very slight, and hardly worth stressing by nomenclatorial separation. Lack of literature unfortunately also prevents me from checking if Mathews was justified in restricting the type locality of the species to Tasmania.

Additional measurements of specimens in our collection.

subpallida: ♂: 182, ♀: ? : 198.

South-western Australia:

♂ ad.: 192, 192, 201, 207, 208, 210, 211, 216.

♂ imm.: 199.

♀ ad.: 201, 207.

♀ imm.: 189, 197.

? ad.: 202.

? imm.: 190, 196.

Kimberley Division:

♂ ad.: 193, 199.

♀ ad.: 187.

♀ imm.: 186.

? imm.: 182.

New South Wales:

♂: 207.

Mayr (1941b) lists three races of *Coracina novaehollandiae* as wintering in New Guinea: *novaehollandiae*, *melanops*, and *didima*, but how these races were identified he does not explain. Earlier Mayr & Rand (1937), and later Rand (1942), wisely refrained from giving their material a subspecific name.

Why Voous & van Marle (1949, Fig. 5) excluded south-western Australia from the range of the species is not clear to me, anyway it is incorrect. Many of the zoogeographical hypotheses brought forward by these authors seem to me highly speculative, but a discussion of the zoogeography of the species falls outside the scope of this paper.

Pomatostomus temporalis rubeculus (Gould)

Grey-crowned Babbler

Pomatorhinus rubeculus Gould, Proc. Zool. Soc. Lond. 7, (1839), March 1840, p. 144—North-west coast of Australia = King Sound, W. Kimberley Division.

Pomatorhinus temporalis nigrescens Mathews, Novit. Zool. 18, 1912, p. 335—North-West Australia (Strelley River).

Pomatostomus innominatus Mathews, Birds Aust., suppl. no. 3, add. and corr., 1924, p. 223—Point Torment, North-west Australia.

Two specimens (Table XXXVII).

Irides light grey with above the pupil a brown spot; bill black, lower half of mandible bluish white; legs dark grey. No moult, plumage slightly abraded.

Not very common but widely distributed in the region in the well-wooded river valleys, where living in small parties of from two to four birds. The birds are rather shy and move fast from tree to tree, hence they are not easy to collect. They draw attention by their cat-like mewling calls. Besides Millstream I have observed the species at Wittenoom and Dale Gorge Creek.

Discussion. Deignan (1950) revised the species, accepting, to use his own words, a "quite surprising" number of subspecies. Condon (1951b) commented upon this and wrote: "From a representative series from Northern Australia from all parts, except the areas assigned to the recently described races *browni* and *mountfordae*, I have been able to distinguish only the following: *rubeculus* (synonym *bamba*), *nigrescens*, and *intermedius* (synonym *innominatus*)." Mack (1953) thought that at least *rubeculus* and *nigrescens* are valid races.

The Western Australian Museum has one specimen from the Northern Territory (South Alligator River) and fair series from various localities in the Kimberley Division and the north-west; in addition four specimens from the Northern Territory have been received on loan from the Australian Museum. In this material, the specimens from the north-west are darkest on the upper surface; those from the Kimberley Division average slightly paler which, however, is discernible only when series are compared for many individual specimens are inseparable, whereas the Northern Territory birds are definitely paler above. Unfortunately the Northern Territory specimens are old and faded, and the material also shows that birds in abraded plumage are paler above than freshly moulted specimens. Condon's suggestion of differences in bill-size is not confirmed by my material. It is significant that our two specimens from the Fortescue River, collected at the same date and locality, show a difference of more than 5 mm (about 20%) in length of the exposed culmen. Both are fully adult birds*. The amount of creamy white coloration on the head is variable, some specimens in the north-west have the brown-grey median stripe on the crown very much reduced, and others have it broad. In all our Kimberley skins the brown-grey is well developed, as in the majority of north-west birds.

As far as nomenclature is concerned, I consider that Kimberley birds should be united with those from the north-west, whereas the paler backed populations from the Northern Territory deserve their own name. The applicability of the name *rubeculus* for the birds from Western Australia will be discussed below.

Deignan (1950) advocated the opinion that *Pomatostomus* occurs in isolated populations but this is contrary to my experience expressed

* I can have no opinion on the races *mountfordae* and *browni*, described by Deignan on size of bill, but the fact that not a single measurement of either bill or wing is given in his paper does nothing to enhance confidence in the validity of these new forms.

above that they are very mobile and energetic birds, present wherever there is suitable habitat (wooded river beds).

Mathews designated as type locality Port Essington, but this is incorrect. This and a number of other new species were described by Gould (1840) in a letter dated May 10th, 1839. Of the species described, thirteen are stated to have come from the north-west coast of Australia, and twelve of these are acknowledged to have been received from Benjamin Bynoe, surgeon of the "Beagle," whereas with the thirteenth, *Malurus cruentatus*, no particulars as to collector or donor are given, but it may safely be assumed that this specimen was also brought back by the Beagle.

Though Mathews is right that Bynoe and the Beagle visited Port Essington, it is equally true that this visit took place only in the second half of 1839. In 1838 and early 1839 the ship had been surveying the western and southern coasts only, the west coast north to Brunswick Bay and Augustus Island (Stokes 1846) in what is nowadays the West Kimberley Division, and it is evident that the new birds must have been obtained there, probably at King Sound, where the Beagle stayed for some time. This causes a number of changes in the type localities as designated by Mathews. I list here the thirteen species concerned, with their type localities as given by Mathews (1931).

Name	Type locality according to Mathews	True type locality
1 <i>Podargus phalaenoides</i>	Port Essington	West Kimberley Division
2 <i>Pachycephala Lanioides</i>	Derby	do.
3 <i>Malurus cruentatus</i>	Port Essington	do.
4 <i>Pardalotus uropygialis</i>	Port Essington	do.
5 <i>Amadina annulosa</i>	Cobourg Peninsula, N.T.	do.
6 <i>Amadina acuticauda</i>	Derby	do.
7 <i>Myzantha lutea</i>	Derby	do.
8 <i>Tropidorhynchus argenteiceps</i>	Port Essington	do.
9 <i>Pomatorhinus rubeculus</i>	Port Essington	do.
10 <i>Ptilotis flavescens</i>	Derby	do.
11 <i>Myzomela erythrocephala</i>	Port Essington	do.
12 <i>Sittella leucoptera</i>	Port Essington	do.
13 <i>Hemipodius castanotus</i>	Port Essington	Swan Point, W. Kimberley Division

I have not, as being outside the scope of the present paper, checked on the correctness of all other restrictions and designations of type localities made by Mathews, but want to draw attention to one more: *Petrophassa albipennis*, erroneously referred to as *Petrophila albipennis* by Stokes (1846, p. 111), was first collected at Swan Point at the entrance of King Sound, and the type locality Wyndham (Mathews 1912b, p. 28) is quite fanciful.

Mathews's reasons for recording so many species as originating from Port Essington were given by him (Mathews 1925, p. 23) but as I have tried to make clear above, Bynoe's visit to Port Essington took place only in the second half of 1839. Many of his later specimens undoubtedly did come from Port Essington, but not the ones described in Gould's letter of May 1839.

It will be noted that in de Schauensee's (1957) paper on Gould's type specimens in the Academy of Natural Sciences of Philadelphia two cotypes of *Amadina annulosa* are stated to be labelled "Port Essington," and that both alleged cotypes of *Pardalotus uropygialis* are from Port Essington. In my opinion this conclusively shows (unless a mistake in labelling was subsequently made) that these specimens are not cotypes. In the case of *Amadina annulosa*, the third specimen from north-west Australia is probably a cotype and quite conceivably the holotype; in the case of the *Pardalotus* it would seem that the type is not in Philadelphia, it may be lost.

I may add that in my opinion Port Essington can hardly be said to be situated on the north-west coast of Australia.

Fortunately the consequences for nomenclature of this correction of type localities are slight as in the majority of cases the King Sound area and the Cobourg Peninsula have the same race. In a few cases, as in that of *Pomatostomus temporalis*, a shift is necessary, which will result in nothing more serious than a re-grouping of a number of Mathewsian synonyms.

Acrocephalus stentoreus gouldi Dubois

Reed Warbler

Acrocephalus gouldi Dubois, Syn. Av. I, 1901, p. 369—nomen novum for *Calamoherpe longirostris* Gould, nec *Turdus longirostris* Gmelin, Syst. Nat. Ed. XIII, I, 1788, p. 823 = *Acrocephalus cafer longirostris* (Gmelin).

Five specimens (Table XXXVIII).

Irides light brown or grey-brown, maxilla black or horny grey, tomia and mandible pinkish white, or fleshy bluish, white at base; legs leaden grey, inside of mouth bright orange. Plumage of the collected specimens fairly fresh, no moult.

Common in the reed beds along the Fortescue River and at the Mill Stream.

Discussion. The Australian reed warblers have been revised by Mayr (1948), whereas subsequently Stresemann & Arnold (1949) have shown that *A. stentoreus* and races is specifically distinct from *A. arundinaceus*, a conclusion confirmed by Zahavi (1957).

Five specimens (4♂, 1♀) from New South Wales (Long Bay, Sydney, Macqueen River) received on loan from the Australian Museum measure: wing, 72, 73, 75, 76, 77; tail, 59, 61, 64, 66, 66; tarsus, 24, 24½, 24¾, 25, 25¼; entire culmen, 19, 19, 19½, 20, 20; exposed culmen 13½, 13¾, 15, 15, 15¼; culmen from anterior point of nostril 10½, 11, 11, 12, 12. Two females from Brisbane, received on loan from the Queensland Museum measure: wing, 71, 74; tail, 59, 65½; tarsus, 24, 25; entire culmen, 19¾, 20; exposed culmen, 13, 14½; culmen from anterior point of nostril 11, 11 mm. This shows that there is not much difference in size from *gouldi*, though the western subspecies runs somewhat heavier in the bill.

As regards possible differences in colour I can say little because specimens evidently fox badly in collections, and all the available material of *australis* and most of that of *gouldi* from the South-West was collected over fifty years ago. Our fresh specimens of *gouldi* differ from old material of both *gouldi* and *australis* by their

much browner, almost chestnut, upper parts, and the darker rufous rump and flanks. Old material is much paler underneath, and the upper parts become duller, more greyish brown, ultimately even with an olive-greyish tone.

Until series of fresh skins are compared it will be difficult to ascertain if *gouldi* can really be separated satisfactorily from *australis* on the basis of colour characters, and if this is not the case, whether or not the slight difference in size would justify retention of the name *gouldi*. Tentatively, and until this point has been cleared, I follow Mayr in accepting *gouldi*.

Mayr (1948) suggested that specimens from the north-west (Strelley River) might differ from topotypical *gouldi* by their more rufous flanks and greyer upper parts. Lack of material from the area prevented him from arriving at a definite conclusion. I am unable to arrive at a conclusion for similar but opposite reasons—lack of fresh specimens from the south-west. The scanty material available, however, points to their being identical (7 specimens from the north-west compared with four from the south-west (Claremont and Lake Yanchep)); greyish olivaceous upper parts as noted by Mayr in birds from Strelley River are doubtless the result of foxing.

Mayr demonstrated that the populations from New Guinea which he (Mayr 1941b) previously included in *australis*, are subspecifically separable, and he accepted the name *cervinus* De Vis (1897) for them, though noticing that the measurements as given in the description of this bird are: "impossibly large for a New Guinea specimen, but De Vis measurements have often been found to be wrong. A re-examination of De Vis' type in the Brisbane Museum would be highly desirable."

Subsequent examination of the type specimen of *Acrocephalus cervinus* De Vis revealed that, in fact, it is a honeyeater and that the name is a synonym of *Timeliopsis griseigula fulviventris* (Ramsay) (cf. Iredale 1956, p. 152). Therefore the race named *Acrocephalus arundinaceus cervinus* by Mayr (1948, 1955) and by Meinertzhagen (1954) should be known as *Acrocephalus stentoreus sumbae* Hartert (I follow Mayr's arrangement of subspecies without own investigation).

In Meinertzhagen's map 13, giving the distribution of the species *A. arundinaceus*, *A. orientalis* and *A. stentoreus* (which Meinertzhagen insists on calling one species, notwithstanding the presence of biological evidence to the contrary), an error is made in the distribution of the race "*cervinus*", as Soemba, the type locality of *sumbae*, is excluded from its range.

Cisticola exilis lineocapilla Gould

Fantail Warbler

Cysticola lineocapilla Gould, Proc. Zool. Soc. Lond. 15, 1847, p. 1—Port Essington.

Two specimens (Table XXXIX).

Irides grey, bill brown, legs pale brown. No apparent moult.

Our comparative material is insufficient but I see no reason not to consider the Millstream specimens to belong to *lineocapilla* described from Port Essington; they agree reasonably well

with specimens from Derby en Eureka, Northern Territory (one of each locality). Lynes (1930, p. 194) repeats the old error, perpetuated by Chasen (1935) and Stresemann (1939, p. 323 Fig. 4) that in Java this subspecies is confined to the eastern part of the island, though it is even known from Oedjoeng Koelon, the western extremity of Java (Hoogerwerf 1948). I have observed individuals on many occasions in the western half of West-Java, where the species is quite common. As Salomon Müller has, as far as I am aware, never visited eastern Java, the type of *Cisticola delicatula* mentioned by Lynes (p. 627) probably has been collected in western Java.

It is also a curious slip from this meticulous author, that he suggested the type to be lost as it was: "not in any of the museums in England." It seems hard to believe that he would have been unaware of the fact that nearly all Gould's types went to the Academy of Natural Sciences of Philadelphia, where the type of *lineocapilla* remains, fortunately, preserved (de Schauensee 1957).

Gerygone fusca fusca (Gould)

Western Warbler

Psilopus fuscus Gould, Synops. Birds Aust., pt. IV, 1833 (April), pl. [61], Fig. 2—Australia: locality uncertain = Swan River, restricted by Mathews (1919-20).

Psilopus culicivorus Gould, Proc. Zool. Soc. Lond. 8, (1840), 1841, p. 174—Western Australia.

Gerygone culicivora wayensis Mathews, Novit. Zool. 18, 1912, p. 308—Mid Westralia (Lake Way).

Three specimens (Table XL).

At Tambrey not uncommon in the gum trees along creek beds.

Mathews (1919-20) transferred the name *fusca* from the form of New South Wales now known as *Gerygone igata richmondi* (Mathews) to the present species, restricting its type locality, given as Australia in the original description, to Swan River. Since Gould (1838) made special mention of the white on the base of the tail feathers, which is apparently absent in *richmondi*, it seems that Mathews was right, and the change has been generally accepted. Nevertheless it seemed interesting to try and trace the type specimen. According to Meise (1931) the type is in Philadelphia, but this is incorrect, as the type specimen was not part of the Gould collection, but belonged to the Earl of Derby. However, in the collection of the Liverpool Public Museums, Mr. Wagstaffe (in litt., 7.IX.1959) has not been able to trace the specimen, so that its whereabouts (if it is still extant) remain unknown to me.

Whittell & Serventy (1948) list the birds from Western Australia under the name *Gerygone fusca culicivora*, but since *culicivora* has become, as a consequence of Mathews's restriction, topotypical of *fusca*, this name cannot stand.

The present specimens, as also material from Day Dawn and Payne's Find, agree in every respect with specimens from Garden Island and the Perth area, hence *wayensis* also enters the synonymy of the nominate race, to which it was already referred by Meise (1931). As our museum has no material from the Kimberley Division, I cannot discuss the status of the forms described by Mathews from that area.

Smicrornis brevirostris mathewsi S. A. White Weebill

Smicrornis brevirostris mathewsi S. A. White, Trans. Roy. Soc. S. Aust. 39, 1915, p. 749—Wantapella Swamp, Central Australia.

Five specimens (Table XLI).

Irides yellowish white, bill pale dirty flesh colour, legs dark dirty flesh colour.

Common throughout the area.

Discussion. The three races occurring in Western Australia are very distinct: *flavescens* in the Kimberley Division, with deep yellow under parts, light upper surface and brownish head; *mathewsi* in the mid-west and North-west with pale under surface, light upper parts (slightly darker than *flavescens*) and greyish brown head, and *stirlingi* in the south-west with dark upper parts.

I have not seen material from Central Australia and follow Keast (1958f) in assigning the specimens from the mid-west to *mathewsi*, though they do not agree very well with the description of that race.

Whether or not the monotypic genus *Smicrornis* is really worth recognition as distinct from *Gerygone* is a question I prefer to leave undecided for the moment. As *Smicrornis* has been used for over a century, it seems advisable to maintain it for the sake of stability.

Cincloramphus mathewsi mathewsi Iredale

Rufous Songlark

Cincloramphus rufescens mathewsi Iredale, Bull. Brit. Orn. Cl. 27, 1911, p. 97—Yalgoo, West Australia (reference copied).

Cincloramphus mathewsi alisteri Mathews, Novit. Zool. 18, 1912, p. 339—East Murchison, West Australia.

Four specimens (Table XLII).

Irides sepia to brownsepia, maxilla horny grey or brownish horny, mandible bluish white, legs dirty greyish flesh or pale pinkish grey. None of the specimens is moulting, their plumage is fairly fresh.

At Millstream Station, where these birds were common, they inhabited a very special biotope, they occurred in open country near the forest edge, with dispersed scanty-leaved or dead trees. These trees they freely used as perching places, and to commence and conclude their song-flights.

Discussion. These specimens agree with material from the Yalgoo district (type locality). There is no doubt that *alisteri* is a synonym. Lack of material prevents me from discussing the other subspecific names given by Mathews; the retention of a trinomial may be unjustified.

Eremiornis carteri North

Spinifex Bird

Eremiornis carteri North, Vict. Nat. 17, 1900, p. 79—North-west Cape, North-west Australia.

Eremiornis carteri assimilis Montague, Aust. Avian Rec. 1, 1913, p. 181—Hermite Island, Monte Bello Group.

Eremiornis carteri rogersi Mathews, Aust. Avian Rec. 1, 1913, p. 192—Hall's Creek, Kimberley Gold Fields (North-west Australia).

Seven specimens (Table XLIII).

Irides brown (fairly light), bill, upper black, lower blue-grey, legs grey to blackish. None of the specimens shows moult.

With one exception, these specimens were taken in a growth of very high and rich clumps of *Triodia*, interspersed with *Acacia* and *Cassia* shrubs, a habitat to which the species is apparently restricted. Though the vernacular name Spinifex Bird is used for it, pure *Triodia* is probably not inhabited. Contrary to many other skulkers of the undergrowth, these birds are easy to collect as they behave very quietly and often remain perched in the same place for a considerable time. To locate the inconspicuously coloured birds, however, is for the same reason difficult. The only call I heard was a moderately loud short: "tk . . . tk . . .", probably the alarm-note. Mathews (1921-1922) depicts a bird of the species with strongly cocked tail, and perched on the ground. I have never seen specimens with the tail so strongly cocked, nor seen them perched on the ground; they were always sitting on branches.

Discussion. I have not seen material from Hermite Island, but the Barrow Island population is usually included with the race *assimilis* by those who recognise that form. As I have been unable to detect any difference at all between the specimens from Tambrey and a series of seven from Barrow Island and two from Thevenard Island off Onslow collected in September 1958, I reduce *assimilis* to synonymy. In this connection it is also worth noting that Montague described his race as smaller than the mainland form, wing-length 53-58 mm: these measurements perfectly agree with those of the Tambrey birds. Mathews (1931), in what is usually considered his best list, placed *assimilis* in the synonymy, though he upheld *rogersi*.

A specimen from the Fitzroy River, 200 miles inland, in our collection, which is almost topotypical of *rogersi*, agrees with *carteri* and is not "much more reddish above" as it should be if *rogersi* were valid.

I have not seen *queenlandica*, but until the validity of that race has been confirmed I prefer to use a binomial for the species.

Amytornis striatus whitei Mathews

Striated Grass-Wren

Amytornis whitei Mathews, Bull. Brit. Orn. Cl. 25, 1910, p. 34—Coongan R., North-western Australia.

Eight specimens (Table XLIV).

Irides brown or sepia, bill dark grey or black, legs grey or blackish grey. None of the specimens shows moult, but they are all in abraded plumage. The feathers are very soft, and combined with the skulking habits of the species, abrasion must be strong. The wings are short and rounded; there are strong black bristles at the gape.

Besides the specimens listed, two juveniles were taken (A 8162, A 8163). After shooting the old birds A 8160 and A 8161, Mr. Buller found them running over the ground between the spinifex, unable to fly, and collected them by hand. Evidently the nos. A 8160-63 formed a family party.

I have not seen the species at Millstream, but at Tambrey it was not uncommon in its special habitat: rocky ridges in spinifex country. They

are very skulking in habits and therefore difficult to collect. No. A 8165 was taken out of a pair, when both birds were hopping, with cocked tails, on the bare ground between clumps of *Triodia* at the edge of a stony ridge. The alarm-call of the species is a rather powerful: "tchèrr . . . tchèrr . . ."

The species was revised by Keast (1958b), who recognised two races in Western Australia, *whitei* and *oweni*, and synonymized *Amytornis rufa* A. J. Campbell & Kershaw with the latter, though he did not examine specimens from near the type locality of *rufus**.

In the collection of the Western Australian Museum there is a series of ten specimens from Well 48 on the Canning Stock Route, the northernmost locality whence the species is known and not far from the type locality of *rufus*. In order to obtain an overall picture of the variation of the species in Western Australia I borrowed an additional five specimens from Borewell, East Murchison, topotypes and paratypes of *oweni*, from the American Museum of Natural History.

The measurements of all these specimens with the averages for the three populations are given in Table XLIVa.

Though the series are very small, the figures suggest that in size *oweni* is intermediate between *whitei* and *rufus*.

In coloration *oweni* is also intermediate; *rufus* has black lines bordering the white striae on the feathers on the forehead only; *oweni* has them over the whole crown, and vague but present on the whole mantle; *whitei* has them distinct and pronounced on the whole upper surface. The general coloration of the upper parts is red-brown in *whitei*, rusty-brown in *oweni*, and rusty-brown almost as *oweni* but on an average a little paler, in *rufus*. On the breast *whitei* has distinct longitudinal striae, *oweni* has these streaks much feebler, *rufus* lacks them altogether though in a few specimens they are faintly indicated. On the under surface, particularly the vent, *whitei* is somewhat darker ferruginous than the other forms.

To make sure that my identification of the Canning Stock Route specimens with *rufus* was correct, I sent some specimens to the National Museum of Victoria in Melbourne, where Mr. McEvey compared them with the type and paratype of *rufus* and also with specimens of *oweni* and *whitei*. Mr. McEvey found much variation in coloration of upper parts, the paratype being darker than the type, but both specimens have the: ". . . black edges to the central shafts entirely lacking except on the forehead"; this settles the question of the identity of the Canning Stock Route specimens. It is interesting that a specimen from Central Australia (R 9985) appeared to agree with *oweni*, thus confirming Keast's opinion. This is the specimen taken by the Horn Expedition at Alice Well and reported upon by North & Keartland (1896, p. 79) and subsequently by A. G. Campbell (1927, p. 31, no. 47). Campbell regarded this specimen as *rufus*.

* Though this form was described as *rufa*, the gender of the genus *Amytornis* is usually regarded as masculine, and consequently the name is here emended to *rufus*.

A specimen from Mt. Kintore in the Musgrave Ranges, examined by Keast (1958b) also agreed with *oweni*.

Originally I had intended to suppress the name *oweni* as a pure intermediate (and to place it as a synonym of *whitei* in order to save the junior name *rufus* for the northern population), but in view of the apparent wide distribution of this intermediate population it seems preferable provisionally to recognise it—at least until the ranges of the various forms have been worked out more satisfactorily—a course also suggested by Mr. McEvey.

Therefore I recognise in Western Australia the following races:

1. *Amytornis striatus whitei* Mathews. Confined to the region generally known as the north-west.

2. *Amytornis striatus oweni* Mathews.

Amytornis striatus oweni Mathews, Bull. Brit. Orn. Cl. 27, 1911, p. 48—East Murchison.

East Murchison and southern Northern Territory.

3. *Amytornis striatus rufus* A. J. Campbell & Kershaw.

Amytornis rufa A. J. Campbell & Kershaw, Emu 12, 1913, p. 274—Lat. 19° 27", about 160 miles north of N.T. Survey Camp C IV (cf. Mathews 1922-1923, on this locality).

Canning Stock Route (Wells 35 and 48) and adjacent part of the Northern Territory (Tanami region).

Stipiturus ruficeps A. J. Campbell

Rufous-crowned Emu-Wren

Stipiturus ruficeps A. J. Campbell, Vict. Nat. 15, 1899 (Jan. 12), p. 116—North-West Cape.

Six specimens (Table XLV).

Irides brown, dark brown, or sepia-brown, bill black, base of mandible and tomtia paler, legs light brown. The specimens are in somewhat abraded plumage and two (Nos. A 8222 and A 8223) show tail moult.

Not uncommon at Tambrey, but the population is evidently not dense. This emu-wren is known as a spinifex-bird, and that is correct, but its optimum habitat is where spinifex (*Triodia*) is interspersed with a few small shrubs (*Acacia* and *Cassia*). The little birds are very inconspicuous, skulking in the clumps of *Triodia*, but attract attention by their song, which is a high and soft squeak: "tzee . . . tzee . . . tzee . . .", continuously uttered. Now and then a male would perch on top of a *Triodia*-clump to deliver his song from this comparatively exposed position. This song certainly accounts for the fact that only males were collected, the female which is presumably silent would be much more difficult to trace.

Discussion. The emu-wrens were revised by Keast (1957a) with whose conclusion that *Stipiturus ruficeps* should retain specific status I fully agree.

Malurus lamberti mastersi Mathews

Purple-backed Wren

Malurus lamberti mastersi Mathews, Novit. Zool. 18, 1912, p. 360—Northern Territory (Alexandra).

Six specimens (Table XLVI).

Irides dark brown, bill male black, female terracotta, legs grey.

Common in dense scrub, where usually seen in pairs or small parties.

Discussion. Not having seen enough material of the various races to form an independent opinion I follow Mack (1934) in assigning these specimens to *mastersi*. The Western Australian Museum has also two males from Bernier Island, three from Dorre Island, and several from Dirk Hartog Island. The Bernier Island specimens belong to the well-marked race *bernieri*, whereas those from Dirk Hartog agree fully with the mainland race. The three skins from Dorre Island show some variation, one is close to *bernieri*, another agrees almost entirely with *mastersi*; probably Dorre Island is inhabited by a variable intermediate population.*

The museum also has seven males of *dulcis* from the Northern Territory and the Kimberley Division, whence we have specimens from Stryath River, Ord River, and Wotjulum. One of the Ord River specimens has the crown and ear coverts very blue, and may belong to *mastersi*, but about the Wotjulum specimen there can be no doubt, it perfectly agrees with a skin from South Alligator River, the type locality of *dulcis*. It thus considerably extends the range as given by Mack. Whittell & Serventy (1948) list *M. dulcis* under the name of *M. amabilis*, but in view of Mack's (1934) remarks it seems better to keep the two separate. I find it difficult to believe that *dulcis* is specifically different from *lamberti*, but having no females I am not in a position to judge how much these differ from females of *lamberti*, and all these forms belong to a notoriously difficult group on which the last word has not yet been said or written.

I take the liberty to add a few words about *Malurus splendens*. Mack (1934) condemned his own new subspecies *aridus* to a synonym of *riordani* Mathews, described from Yalgoo, when he wrote that the single specimen from Yalgoo he examined agreed with *aridus*, and subsequently it was listed as such by Whittell & Serventy (1948). In the collection of the Western Australian Museum are one male from Yalgoo and one from Mt. Magnet, both in fresh plumage. These specimens do not differ from males from Perth and Albany (type locality of *splendens*) and other localities in the south-west. Therefore *riordani* is evidently a synonym of *splendens*. Whether or not *aridus* is a separable race I am unable to say as no specimens from its type locality or from other localities in the eastern part of the range of the species are available to me.

Malurus leucopterus leuconotus Gould

Blue-and-White Wren.

Malurus leuconotus Gould, Proc. Zool. Soc. Lond. 1865 (June), p. 198—Interior of Australia, precise locality unknown.

Four specimens (Table XLVII).

* During a recent collecting trip to Dorre and Bernier Islands (July 1959) this supposition was confirmed. The results of this trip will be published separately.

Male, irides dark brown, bill black, legs grey; female irides sepia, bill pale pinkish brown, base of manible almost white, legs pinkish grey.

Not uncommon in dispersed *Acacia* and *Cassia* scrub in open country, where found in pairs or small parties.

Discussion. There is no difference between specimens from various parts of continental Australia; perhaps specimens from the south-eastern part of the range average slightly larger, but the difference is negligible. Even Mathews (1917b) had observed that *leuconotus* and *cyanotus* are scarcely separable, and Mack (1934) united all Australian populations under one name. I refer to Mack's paper for synonymy. Contrary to Mack, I apply a trinomial since there is no doubt in my mind that *leuconotus* is conspecific with the insular *leucopterus*.

Epthianura tricolor Gould

Crimson Chat

Epthianura tricolor Gould, Proc. Zool. Soc. Lond. 8, (1840), July 1841, p. 159—Habitat unknown.

Six specimens (Table XLVIII).

Irides white, bill black, legs dark grey. All specimens are in rather fresh plumage, none shows moult. Gonads enlarged.

At Tambrey, this species was common on a place where spinifex had been burned one or two years previously, and where an open vegetation of Leguminosae, Solanaceae, etc. predominated. The birds were in full song and showed pair formation, and were evidently going to breed.

Discussion. As Keast (1958c) has shown, this nomadic species shows no geographical variation.

Petroica cucullata (Latham)

Hooded Robin

Muscicapa cucullata Latham, Index Ornith, Suppl. 2, 1801, p. li—New South Wales (reference copied).

Melanodryas picata Gould, Handb. Birds Aust. I, 1865, p. 285—North-west coast of Australia (reference copied).

Six specimens (Table XLIX).

Irides brown (♂) or sepia (♀), bill and legs black. No moult, plumage somewhat abraded, No. A 8141 strongly abraded.

A fairly common species in half open country, seen solitary or in pairs.

The species has been revised by White (1937) and by Keast (1958a), and for comparison I give here the measurements of all specimens in our collection.

Western Australia (North-West):

♂: 91, 93, 94, 94, 95, 95, 95, 97½.
♀: 87, 88, 89, 89.

Western Australia (Day Dawn, Mid-West):

♂: 92, 97.
♀: 86, 87, 88, 90.

Western Australia (South-West):

♂: 92, 94, 95, 95, 97, 98.
♀: 85, 86.

Western Australia (Well 37, Canning Stock Route):

♂: 89.

Northern Territory (Eureka, S. Alligator River):

♂: 88, 89.

South Australia:

♂: 97½.

New South Wales:

♂: 102.
♀: 93, 93, 95.

Victoria:

♂: 100.

From this scanty material it would seem possible to recognise three size races: a large race from New South Wales and Victoria, an intermediate one from Western Australia (except interior and north), and a small one from the Northern Territory and adjacent parts of Western Australia. However, White's and Keast's figures show that there is in the Kimberley Division and the Northern Territory a greater range of variation (87-94), which means that these birds are not satisfactorily separable from those of the south-west of Western Australia. Keast writes of a gradient of diminishing size from south to north, but this apparently also exists going from east to west. Personally—this indeed is purely a matter of personal opinion—I consider it, contrary to Keast, inadvisable to nomenclatorially recognise the smaller northern populations (*picata*) because this would involve that all the specimens from Western and South Australia, half the continent, would have to be indicated by the awkward *cucullata-picata*. In this connection it is instructive to note that, though both White and Keast recognise two size races, *cucullata* and *picata*, the first-mentioned author includes all Western Australia in *picata*, whereas the second unites the birds from the south-west of the state with the nominate race. It is curious that Keast omits all reference to White's paper, which was apparently unknown to him.

The specimens from West Pilbara are interesting from the zoogeographic point of view as they agree in measurements with those from the south-west, and are not smaller. Just as with *Rhipidura leucophrys* the size-gradient apparently begins in the arid areas to the north and east of the district.

Rhipidura fuliginosa preissi Cabanis

Grey Fantail

Rhipidura Preissi Cabanis, Museum Heineanum I, 1850-51, p. 57—West Australien.

Two specimens (Table L).

Irides reddish brown, bill brown, legs black. Apparently no moult, plumage somewhat abraded. The difference in tail-length between the two specimens is remarkable.

This species was not common, it occurred in the forest along the Fortescue River and also in dense secondary growth some distance away from the river. As elsewhere, the birds were very confiding.

Discussion. Recently the species has been revised by Keast (1958a) according to whom the area of Carnarvon and the Fortescue River is inhabited by an unnamed population that is close to, but not identical with, *subphasiana* Mathews of the Kimberley Division, and distinct from *preissi*.

Contrary to Keast, I find the two specimens from the Fortescue identical with true *preissi*; also I fail to find much variation in size in different parts of the state, as the following figures show. At any rate, specimens from the Hamersley region agree in size with those of the south-west, and I have not the slightest hesitation in referring them to *preissi*. Our New South Wales specimens, which according to Keast should bear the name *alisteri* Mathews,

differ from *preissi* by having a darker, blackish, crown, darker throat spot, and darker buffish under surface.

Measurements of specimens in our collection are:

South-western Australia (Rabbit Island, Garden Island, Harvey River, Moir Pass, Herdsman Lake, Ellenbrook, Denmark District):

♂: 71, 76, 77, 77, 77; ♀: 72, sex?: 73, 73.

Kimberley Division (Ord River, ♀: Point Torment, sex?):

♂: 75; sex?: 64½.

New South Wales:

♂: 75, 78, 79; ♀: 71; sex?: 70.

I cannot refrain from commenting on Keast's (1958a) figure 1, which gives a not entirely correct picture as far as the north-west is concerned. Firstly, *Rhipidura fuliginosa* is not strictly a mangrove species in this area, but occurs in any well-wooded country away from the coast. Secondly the mangroves in the region do not form a continuous belt from the Kimberley Division south to Point Cloates, as suggested in the figure, but there is a gap of some sixty miles along the Eighty Mile Beach. Moreover I very much doubt if the distributional gap indicated by Keast south of Shark's Bay really exists, it seems much more likely that the species has an uninterrupted range from the south-west to the Fortescue River, but at present I have no material to prove this assumption. I must draw attention to the fact that Keast examined specimens from Carnarvon, though the place occupies a blank on this map.

It will be appreciated that the identity of the Fortescue River birds with *preissi* somewhat affects Keast's hypothesis on correlation between colour and humidity.

Condon (1951b) united all birds from the southern and eastern parts of Australia with the western ones under one name (*preissi*) but in view of the findings of Keast and myself this would seem to go too far.

Rhipidura leucophrys leucophrys (Latham)

Willie Wagtail

Turdus leucophrys Latham, Index Ornith. Suppl., p. xlv, 1801—New South Wales (Sydney) (reference copied).

Muscicapa tricolor Vieillot, Nouv. Dict. d'Hist. Nat., nouv. éd., XXI, 1818, p. 490—Timor — New South Wales (reference copied).

Rhipidura motacilloides Vigors & Horsfield, Trans. Linn. Soc. Lond. 15, 1827, p. 248—George's River, New South Wales.

Leucocirca laticauda Swainson, Nat. Libr. (Jardine) XIII, 1838, p. 130, pl. XI—Australia or the East Indies, designated type locality Sydney, New South Wales (Mathews, 1923b).

Rhipidura picata Gould, Introd. Birds Aust., 1843, p. XXXIX—Port Essington.

Rhipidura tricolor utingu Mathews, Aust. Avian Rec. 1, 1912, p. 90—Cape York.

Leucocirca leucophrys carteri Mathews, Birds Aust. IX, 1921, p. 41—Broome Hill, South-west Australia.

Five specimens (Table LI).

Irides dark brown, bill and legs black. None of the specimens shows moult.

A common bird, as everywhere else in its range. Normally seen in pairs.

Discussion. Keast (1958a, p. 85) claimed the existence of a size gradient going from south to north, but his material from the north-west was very poor and in the measurements of his two specimens from Point Cloates evidently a

misprint occurs, which renders them useless. The present series shows that there is no difference in size between birds from West Pilbara and birds from the south-west, for which Keast measured wing-lengths of 92-101, average 98 mm in 8 specimens. I have not remeasured the specimens from the south-west in our museum's collection, as Dr. Keast already used them for his study.

Keast (1958a) and Mack (1953) recognised two subspecies, a large southern and a small northern one, but on the basis of Keast's own figures, I do not consider it justified to maintain the northern populations as a distinct race. It would be nonsense to call the populations of the south-west (wing 92-101, cf. Keast l.c.) *leucophrys* and the smallest ones of Cape York (wing 91-96) and coastal Northern Territory (wing 91-96) *picata*. It may be remarked, moreover, that Junge (1939) found for four birds of Cape York wing measurements of 92-101 mm. Though the existence of a difference in average size is beyond doubt, the range of overlap is such that it should not be used as an excuse for nomenclatorial splitting.

In recent years several partial revisions of the species have appeared; Keast revised the Australian populations, whereas Mayr (1931), and Junge (1939) commented on the populations of the islands to the north, concluding that the whole area from the Moluccan Islands to the Bismarck Archipelago is occupied by one single subspecies of somewhat variable dimensions, which has to be called *Rhipidura leucophrys melaleuca* (Quoy & Gaimard).

Hartert (1905) initially stated that the difference between *leucophrys* and *melaleuca* is one of bill-size, the latter subspecies having a much larger bill. Curiously Stresemann (1914) and Hartert (1930) later did not mention this character at all and Hartert commented: "It was not so stupid of us and Ogilvie-Grant to unite all the birds from East and North Australia with those of New Guinea and Papuan Islands. The various forms seem to differ only by size" His comments may have influenced Mayr (1931), who wrote in his discussion of *melaleuca*: "It may be noted, however, that the specimens from South New Guinea and Aru Island are, on the average, slightly smaller and approach somewhat the smaller *picata* Gould of Northwest Australia". Later Mayr (1941b) included *picata* in his List of New Guinea Birds as probably occurring near Merauke.*

In order to ascertain the position of the south New Guinea birds, and to check on the validity of *melaleuca* as opposed to the nominate race, I examined 18 specimens of *melaleuca* from several Moluccan Islands, the Aru Islands and many parts of Dutch New Guinea, from the Leiden Museum, kindly sent on loan by Dr. Junge. There is no material from Merauke among them, but there are specimens from Bivakeiland, Alkmaar, and the Aroe Islands. All

* The name *picata* was first used for birds from southern New Guinea by Stresemann & Paludan (1935); these authors do not mention the size of the bill, and the yellowish tinge of the under surface regarded by them as diagnostic of *picata* is probably due to stain of some sort, it certainly does not occur normally in birds from Northern Australia.

these specimens agree in their large bill-size, in which they differ conspicuously from all Australian specimens, and in this material there are no signs that the birds of the Aroe Islands or South New Guinea approach the nominate race.

To conclude: the species *Rhipidura leucophrys* can be divided into two clear-cut races: the small-billed *leucophrys* which occupies the whole of the Australian continent, and the large-billed *melaleuca* which occupies the Moluccas, New Guinea and satellite islands, Bismarck Archipelago and the Solomon Islands. New Guinea is inhabited by one race only, and the race *picata* (which anyway must be considered a synonym of *leucophrys*) must be removed from the New Guinea list.

Both subspecies show a considerable but irregular geographic variation in size (of wing), but this is not enough to base additional subspecies on. Intergradation between *leucophrys* and *melaleuca* is not known to occur.

***Pachycephala rufiventris rufiventris* (Latham)**
Rufous Thickhead

Sylvia rufiventris Latham, Index Ornith., Suppl., 1801, p. xli—New South Wales (reference copied).

Five specimens (Table LII).

Irides male chestnut brown, female dark brown, bill and legs black or blackish grey. Weight of no. A 8097, 18 g, of A 8098, 20 g. The nos. A 8094 and A 8095 are in somewhat abraded plumage, the other specimens in fairly fresh plumage, none shows moult.

A common species in woodland along river beds and near water holes.

Discussion. These specimens are identical with material from the south-west, and the males with males from New South Wales, though they are perhaps on the average a trifle paler on the under surface. From the south-west I have several specimens which are quite as dark underneath as skins from New South Wales, hence I agree with Mayr (1954) that all these populations belong to the nominate race.

***Colluricincla harmonica rufiventris* Gould**
Shrike -Thrush

Colluricincla rufiventris Gould, Proc. Zool. Soc. Lond. 8, (1840), 1841, p. 164—Swan River, Western Australia.

Colluricincla rufiventris murchisoni Mathews, Aust. Avian Rec. 1, 1912, p. 94—East Murchison, Westralia.

Colluricincla rufiventris carteri Mathews, Aust. Avian Rec. 5, 1923, p. 35—Near Albany, South-west Australia.

Five specimens (Table LIII).

♂: irides red-brown, bill and legs horny black; ♀: irides brown, bill maxilla black, tomium and mandible fleshy bluish white, legs bluish grey.

Fairly common along creek-beds and in other well-wooded places throughout the area.

Discussion: This material, with two specimens from North-West Cape in our collection, differs from southern specimens by having the rufous of the under surface more extended, and the grey of the breast reduced. The females have the whole under surface buffish, the males are buff from the lower breast downwards. It may be remarked that the characters (more rufous on

under surface, brownish bill) ascribed by Serventy & Whittell (1951) to juvenile birds, actually are the female characters. Females also have more or less distinct longitudinal striae on the upper breast.

Originally I believed that the differences listed above might suffice for subspecific separation of the northern birds, but in view of the fairly large amount of individual variation in the presence of buff coloration in the southern birds, I prefer to keep all these populations under one name. Of Mathews's *murchisoni* the American Museum of Natural History (Mathews collection) has only two specimens, of which I have received the best one on loan; it is dark grey on the breast, and agrees with the southern birds, hence the name *murchisoni* cannot be used for the northern birds by those who may consider the slight difference worthy of nomenclatorial recognition, and remains in all circumstances a synonym of *rufiventris*.

Going from Perth to the south there may be a slight darkening of the grey colour, but if such a trend really exists it is much too slight to justify recognition of *carteri* (I have compared good series, including topotypes of both *rufiventris* and *carteri*). Mathews (1931) had relegated both *murchisoni* and *carteri* to synonymy.

***Oreoica gutturalis gutturalis* (Vigors & Horsfield)**
Bell-Bird

[*Falcunculus*] *gutturalis* Vigors & Horsfield, Trans. Linn. Soc. Lond. 15, (1826), 1827, p. 212—Kent's Group (errore!) = Sydney (designated by Mathews).

Oreoica cristata westralensis Mathews, Novit. Zool. 18, 1912, p. 377—South-West Australia.

Three specimens (Table LIV).

Irides of male orange-yellow, bill black, legs dark grey. No. 8368 was shot while singing, testes large, plumage abraded, subcutaneous parasites were found on head and neck. None of the specimens shows moult.

Judging from the song, the species was not uncommon near Tambrey but the birds were shy and difficult to collect.

Discussion. There is no difference either in coloration or in measurements between birds from the north-west, south-west, and south of Western Australia (material compared from Albany, Williams, Ravensthorpe, Lake Dundas). Three specimens from the Canning Stock Route are paler, browner, on the dorsal surface, but then specimens in abraded plumage (as they are) are always lighter so that I do not attach much significance to this difference.

Mathews (1912a) described *westralensis* as differing from the nominate race: "... in its slightly larger size, lighter and greyer coloration above and below", but our material does not show these differences.

Some additional wing measurements are:

South-West Australia (Albany, Ravensthorpe, Ten-terden):

♂: 107½, 110.

♀: 99.

Canning Stock Route (Wells 16 and 24):

♂: 107, 110, 110.

New South Wales (Australian Museum):

♂: 106, 107.

♀: 106, 108.

The New South Wales material was insufficient for evaluating possible very slight differences in tone or colour, but in view of the strong individual variation (largely caused by wear), I see no reason to maintain *westralensis* and am therefore in full support of Mayr's (1953) views. Condon (1951b, p. 41) had already reduced *clelandi* Mathews from Coonalpyn, South Australia, to a synonym of the nominate race.

Having no material from the Kimberley Division (*mungi* Mathews 1912), Northern Territory (*pallescens* Mathews 1912), and Dirk Hartog Island (*lloydi* Carter & Mathews 1917), to assist me in forming an independent opinion, I maintain a trinomial on the authority of Mayr (1953).

Mathews's designation of Sydney as type locality of the species is unfortunate as, at least normally, it does not occur there (Hindwood 1942).

***Climacteris melanura wellsi* Ogilvie-Grant**
Black-tailed Tree-Creeper

Climacteris wellsi Ogilvie-Grant, Ibis (9) 3, 1909, p. 664—Clifton Downs, Upper Gascoyne River.

Whitlocka wellsi striata Mathews, Bull. Brit. Orn. Cl. 44, 1923, p. 15—Shaw River, Mid-west Australia (reference copied).

Six specimens (Table LV).

Irides brown, bill black, white at gape, legs black. The specimens are in slightly abraded plumage, no moult. Specimen A 8099 has the black throat of a male and may have been incorrectly sexed as a female.

Not uncommon at Tambrey Station, where occurring in the widely spaced gumtrees of fairly open parklike country. The song is a whistling note, repeated from six to eight times: "tseet—tseet—tseet— . . ."

Discussion. A well marked subspecies, much more rufous all over than the nominate race occurring in the Kimberley Division.

I am convinced that the closest ally of *Climacteris* is *Neositta*, and that these genera have nothing to do with *Certhia* or *Sitta*.

***Dicaeum hirundinaceum* (Shaw)**
Mistletoe Bird

This widely distributed species was during our visit extremely rare in the area. On 12th July I observed several specimens on Marillana Station, and Mr. Buller thinks he saw one female flying overhead on Millstream Station.

***Pardalotus substriatus murchisoni* Mathews**
Striated Pardalote

Pardalotus striatus murchisoni Mathews, Novit. Zool. 18, 1912, p. 388—West Australia (Murchison).

Five specimens (Table LVI).

Male, irides brown, bill and legs black; immature female, irides grey-brown, bill black, white at gape, legs black. No. A 8236 has the crown feathered green-yellow, not black, and is therefore probably immature. None of the specimens shows moult.

Common and widely distributed in the area.

Discussion. Not having enough material to form an independent opinion I follow Hindwood and Mayr (1946) in recognising the race

murchisoni, though I note that Condon (1951b, p. 58) calls it an extremely doubtful form.

***Pardalotus rubricatus pallidus* A. J. Campbell**
Red-browed Pardalote

Pardalotus pallida A. J. Campbell, Emu 8, 1909, p. 142—The region of the Coongan and De Grey Rivers.

Two specimens (Table LVII)

Irides yellow, maxilla horny black, mandible bluish white, legs grey-flesh. No moult, plumage somewhat abraded.

Apparently less common than the preceding species.

Discussion. The Western Australian Museum has material from the north-western part of the state only, so that comparison with representatives of other named populations is impossible. The description of *pallidus*, however, is convincing and the race has been accepted by Condon (1951b).

***Melithreptus laetior* Gould**
Golden-backed Honeyeater

Melithreptus laetior Gould, Ann. Mag. Nat. Hist. (4) 16, 1875, p. 287—Lake Eyre.

Melithreptus gularis coongani Mathews, Novit. Zool. 18, 1912, p. 392—North-West Australia (Coongan River).

Five specimens (Table LVIII).

Irides brown, bare skin round eye lemon yellow, bill black, legs orange. None of the specimens is in moult, their plumage is slightly abraded except no. A 8111 which is strongly abraded.

A moderately common inhabitant of the wooded areas.

In default of toptotypical material I am not able to judge the validity of the described races, but I do not expect them to be valid as their descriptions are far from convincing. Though Condon (1951b) certainly has a strong case in reducing *laetior* to subspecific status, I prefer to keep *gularis* and *laetior* as different species. The morphological differences between *gularis* and *laetior* are of about the same magnitude as those between *M. lunatus* and *M. albogularis*, which at a time, have been considered to belong to one species, but their specific diversity has now been well established, most recently by Hindwood (1951) and Mack (1953).

***Lichmera indistincta indistincta* (Vigors & Horsfield)**

Brown Honeyeater

[*Meliphaga*] *Indistincta* Vigors & Horsfield, Trans. Linn. Soc. Lond. 15, 1827, p. 315—King George's Sound, on the south coast of New Holland.

Glyciphila? ocularis Gould, Synops. Birds Aust. pt. IV, 1838, descr. p. 6—Van Diemen's Land (errore) — New South Wales.

Glyciphila? subocularis Gould, Synops. Birds Aust. pt. IV, 1838, descr. p. 6—New South Wales.

Stigmatops indistincta rufescens Mathews, Novit. Zool. 18, 1912 (January), p. 402—Northern Territory (Crawford Springs).

Stigmatops indistincta media Mathews, Novit. Zool. 18, 1912 (January), p. 403—Parry's Creek, North-West Australia.

Stigmatops indistincta perplexa Mathews, Novit. Zool. 18, 1912 (January), p. 403—Marble Bar, North-West Australia.

Stigmatops indistincta melvillensis Mathews, Aust. Avian Rec. 1, 1912 (2 April), p. 50—Melville Island, Northern Territory.

Stigmatops indistincta ovida Mathews, Aust. Avian Rec. 1, 1912 (18 September), p. 98—Cairns, North Queensland.

Lichmera indistincta yorkei Mathews, Aust. Avian Rec. 5, 1923 (21 February), p. 37—York, West Australia.

Lichmera indistincta perthi Mathews, Aust. Avian Rec. 5, 1923 (21 February), p. 37—Perth, West Australia.

Lichmera indistincta milligani Mathews, Aust. Avian Rec. 5, 1923 (21 February), p. 37—Stirling Ranges, South-west Australia.

Seven specimens as listed (Table LX).

Irides brown-grey, bill black, legs dark grey. No. A 8209 is moulting rectrices, no. A 8212 shows moult in the wings. It is likely that specimen no. A 8212 has been incorrectly sexed as a male, for its measurements point to its being a female.

A common species wherever there were trees. The attractive song is curiously reminiscent of that of *Acrocephalus* sp., a fact already noted by Le Souëf (1900, p. 198) and Serventy & Whittell (1951).

Discussion. Stresemann (1912) undertook the only serious revision ever made of the species. On the Australian continent he recognised two races: the nominate race in the west and north, and *ocularis* in the south-east. As differential character he mentioned only in adult males the somewhat darker upper surface, particularly the darker crown, of *ocularis* as compared with *indistincta*. The races *rufescens*, *media* and *perplexa* he referred to the synonymy. He tentatively recognised *melvillensis* Mathews, but apparently only for the zoogeographic reason that Melville Island birds seemed to agree fully with *ocularis* and not with *indistincta*, to which he assigned the birds of the opposite mainland of the Northern Territory.

Subsequently Mathews, ignoring Stresemann's work, described four more races, of which he himself later (Mathews 1931) relegated two to synonymy.

I have compared large series from Western Australia and the Northern Territory with two skins from New South Wales and five from southern Queensland, and found that even Stresemann's division into two races cannot be upheld. Though the material from Queensland and New South Wales was scanty, it contained some adult males. It proved quite impossible to distinguish these from specimens from south-western Australia. Therefore I consider all Australia to be inhabited by one race only (I have seen topotypical material of all races, except *oida* and *melvillensis*).

The range of the nominate race apparently includes southern New Guinea, whereas the races *limbata* and *nupta* are found on the Lesser Soenda Islands and the Aroe Islands respectively.

The genus *Gliciphila* as understood by recent authors (for example Whittell & Serventy 1948, and Serventy & Whittell 1951) is clearly artificial. The Brown Honeyeater is certainly not congeneric with the type of *Gliciphila*, which is *G. melanops*, and until its relationships are better understood it seems best to retain the species in *Lichmera*. The third species included in the genus by Serventy & Whittell (*albifrons*) apparently belongs to the genus *Meliornis* and should be known as *Meliornis albifrons*.

Certhionyx variegatus Lesson Pied Honeyeater

On 23 July I observed a pair in some bushes in the middle of open country on Millstream Station.

Meliphaga virescens forresti (Ingram) Singing Honeyeater

Ptilotis forresti Ingram, Bull. Brit. Orn. Cl. 16, 1906, p. 116—Alexandra, Northern Territory (reference copied).

Ptilotis sonora murchisoni Mathews, Novit. Zool. 18, 1912, p. 405—West Australia (East Murchison).

Ptilotis sonora rogersi Mathews, Novit. Zool. 18, 1912, p. 406—North-West Australia (Wyndham).

Ptilotis sonora decipiens Mathews, Novit. Zool. 18, 1912, p. 406—North-West Australia (Mungi).

M[eliphaga] v [virescens] lipferti Mathews, J. Roy. Soc. W. Aust. 27, 1942, p. 77—Well 33 on the Canning Stock Route.

M[eliphaga] v [virescens] lewisi Mathews, J. Roy. Soc. W. Aust. 27, 1942, p. 77—Lewis Island, Dampier Archipelago.

Seven specimens as listed (Table LX)

As Whittell & Serventy (1948, p. 94 footnote 1) pointed out this species is in need of revision. The presence in the Western Australian Museum of a good series, and of the type specimens of four described forms enabled me to bring some order into the chaos created by Mathews. Actually the geographic variation follows a fairly simple pattern; birds from the south-west are large and dark, birds from the north and interior are smaller and paler, especially on the under surface. However, to express this variation in ternary nomenclature is not so simple, for *Meliphaga virescens* is a common species with a continuous range throughout the Australian Continent and the variation that occurs is extremely gradual. On the other hand the differences between some of the extremes are such, that I consider it undesirable to keep all populations under one name.

Before describing the geographic variation in detail something has to be said about the type locality of the species. Mathews (1914, p. 101) suggested as type locality Shark's Bay, and Stresemann (1951) thought that perhaps the type came from Bernier Island. The type specimen of *Melithreptus virescens* Vieillot is still present in the Paris Museum, where Dr. Jouanin kindly compared it with seventeen specimens from various localities which I sent him on loan. He also supplied me with some information concerning its provenance. The locality is given as "Nouvelle-Hollande" and under the socle of this old mounted bird are some manuscript lines written by Dufresne, who was "aide-naturaliste au Muséum" from 1793 to 1832: "Asie australe. Corvette le Naturaliste. Expédition du Capitaine Baudin. An 11". This inscription proves (writes Dr. Jouanin) that the specimen was part of the collection brought back to France in 1803 by the Capitaine Hamelin whom Baudin sent back at the end of 1802 with all the collections already gathered by the expedition. But this historical detail is without great meaning in the present case.

The type is large (wing 95-96 mm, tail 88, tarsus 25, bill damaged, but not small), and Dr. Jouanin thinks that the type locality may be safely restricted to Bernier Island.

It is curious—but not really surprising from a careless author as Mathews, who was certainly responsible for these notes—that Carter & Mathews (1917) stated that: “The type of the Singing Honey-eater was obtained at Shark’s Bay by the French expedition of 1818 . . .”, an error they repeated four years later (Carter & Mathews 1921). This notwithstanding the fact that the species had already been described in 1817!

As regards the geographic variation in Western Australia, the largest and darkest birds occur on Rottnest Island; our series from there shows uniformly large measurements, including a large bill, and very dark under parts. This would seem to indicate the validity of *insularis*, but unfortunately many birds from the mainland of the south-west (and not only from the coastal area) are just as large and as dark, though others are smaller and paler on the under surface.

Two specimens from North Twin Peak Island are as large and dark as the Rottnest specimens but differ by having appreciably shorter bills. More material from this and from other islands off the south coast is needed before the characters of these populations can be fully understood.

In the south-west, as already stated, some birds are as large and as dark as those from Rottnest, and in general terms the populations from this area may be described as fairly large and rather dark underneath. The length of the bill is variable. Specimens from South Australia (*sonora*), Eucla, and Ebano (*glauerti*) are identical.

The birds from Dirk Hartog Island, Dorre Island and Bernier Island, and surprisingly even those from North-West Cape, are as large as the southern birds, and have large bills, but are slightly paler on the under surface.

Specimens from Carnarvon, on the other hand, are somewhat smaller and have definitely smaller bills (only three specimens are available). It seems therefore that in the mid-west the large populations are purely coastal.

Smaller specimens with pale under surface occur in the north-west, and specimens from East Murchison (*murchisoni*), and Barrow Island are identical. The only specimen from Lewis Island (*lewisi*) is rather large, but does not show other differences and it is unlikely that *lewisi* is a valid race.

In nomenclature, I think that the geographic variation can best be expressed by recognising two races in Western Australia.

1. *Meliphaga virescens forresti* (Ingram), with the synonyms listed on a previous page.

Distribution. Northern and inland Australia, in Western Australia at least as far south as the Hamersley region and East Murchison; also Barrow Island and Lewis Island. Birds from Carnarvon are intermediate between this and the nominate race.

The material I have seen from the Northern Territory and from near Alexandra (type locality of *forresti*) was old and not in good condition, but in view of Condon’s (1951b, p. 60) remarks it

seems safe to apply the name *forresti* to the birds from Western Australia.

2. *Meliphaga virescens virescens* (Vieillot).

Melithreptus virescens Vieillot, Nouv. Dict. d’Hist. Nat., Nouv. éd. XIV, 817, p. 329—la Nouvelle Hollande, restricted to Shark’s Bay by Mathews (1914), and here further restricted to Bernier Island.

Ptilotis sonorus Gould, Proc. Zool. Soc. Lond. 8, (1840), 1841, p. 160—South and Western Australia, restricted to South Australia by Mathews (1912a).

Ptilotis insularis Milligan, Emu 11, 1911, p. 124—Rottnest Island, off Fremantle, Western Australia.

Ptilotis sonora broomei Mathews, Novit. Zool. 18, 1912, p. 405—Broome Hill, South-West Australia.

Meliphaga virescens hartogi Mathews, Bull. Brit. Orn. Cl. 40, 1920, p. 76—Dirk Hartog Island, West Australia (reference copied).

Meliphaga virescens glauerti Mathews, J. Roy. Soc. W. Aust. 27, (1940-1941), 1942, p. 77—Ebano.

Distribution. South-western Australia and southern South Australia, in coastal Western Australia north to North-West Cape.

Birds from the northern part of the range (including Bernier Island, the type locality) are paler underneath than those from the south, but the difference is too slight to be recognised in nomenclature.

The measurements of all the material from Western Australia in the Western Australian Museum, except juveniles and specimens which show heavy moult, are listed below. It is likely that a number of specimens are incorrectly sexed, which may explain the great size differences in specimens from the same localities and allegedly of the same sex. I feel justified in doubting much of the sexing since in the specimens recently collected on Bernier and Dorre Islands, at Carnarvon, and at North-West Cape, and sexed by me personally, a difference in size between the sexes is evident (Table LX).

Meliphaga keartlandi (North)

Grey-headed Honeyeater

Ptilotis keartlandi North, Ibis (7) 1, 1895, p. 340—McMinn’s Range, Central Australia.

Twelve specimens (Table LXI).

Irides grey-brown, bill black, legs fleshy grey. Nos. A 8312 and A 8318 are fledglings. No. A 8313 is moulting retrices, the other specimens are not in moult, they are in slightly to strongly abraded plumage.

This species was plentiful in a somewhat specialized habitat: low trees and scrub in rocky gullies and other rocky environments; never observed in flat country. Apart from the two fledglings collected I have on several occasions seen young birds attended to by their parents.

Discussion. I have no material for comparison from outside Western Australia, but in view of Condon’s (1951b, p. 61) remarks it seems best to give the species a binomial.

Meliphaga penicillata carteri (A. J. Campbell)

White-plumed Honeyeater

Ptilotis carteri A. J. Campbell, Vict. Nat. 16, 1899 (4 May), p. 3—no locality given, but apparently Point Cloates.

Ptilotis penicillata ladasi Mathews, Novit. Zool. 18, 1912, p. 413—West Australia (East Murchison).

Ptilotis geraldtonensis Ashby, Emu 20, 1921, p. 190—Geraldton and Dongara, Western Australia.

Five specimens (Table LXII).

The specimens are in somewhat abraded plumage, and show no moult. No. A 8168 is perhaps juvenile, which may explain its small measurements.

Very common in the gum trees along rivers and creeks.

Discussion. Mathews (1931) placed *ladasi* and *geraldtonensis* in the synonymy, and I fully agree with him. Unfortunately material from the Kimberley Division (described as *calconi* Mathews) is not available to me, so that I cannot judge the validity of that race. *M. p. carteri* is very different from the nominate race: slightly smaller, upper parts paler and more yellowish brown, not grey, sides of head and throat canary yellow instead of head greenish yellow and throat greyish, under surface light yellowish instead of brownish grey with medially only a trace of yellow.

The description of *leilavalensis* North (1899), published two weeks earlier than that of *carteri*, seems to indicate a form close to *carteri*, and I have been unable to examine material of the former. Dr. Keast (oral communication) has assured me, however, that *leilavalensis* and *carteri* are different.

In the material from the Western Australian Museum no size gradient within the state is apparent, specimens from the southern part of the range of the race measure:

Ebano: ♀: 76.

Yandanocka: ♂: 81, 81, 81, 81, 82.

Moora: ♂ 78 (abraded).

In contrast the measurements of some specimens from New South Wales are: ♂: 85, 85, 85, 87, 88, 91.

Myzantha flavigula lutea Gould

Mynah

Myzantha lutea Gould, Proc. Zool. Soc. Lond. 7, (1839), 1840, p. 144—North-west coast of Australia = Derby (restricted by Mathews).*

Myzantha flavigula wayensis Mathews, Novit. Zool. 18, 1912, p. 418—West Australia (Lake Way).

Four specimens (Table LXIII).

Irides sepia, bill orange-yellow, basal third of bill and bare skin round eyes yellow, legs light orange or yellow-orange. No moult, plumage abraded.

A common species which, moreover, does not avoid the vicinity of man.

Unfortunately we have but one specimen from the Kimberley Division (Wotjulum, not far from Derby, the restricted type-locality of *lutea*), and it is apparently immature. However, it does not seem to differ from material from the West Pilbara District. Specimens from Milly Milly and Nannine are also identical, which makes it practically certain that *wayensis* (type locality Lake Way, east of Nannine) is invalid. When Mathews described *wayensis* he only compared it with the very different *obscura* but with his typical nonchalance omitted all mention of *lutea*.

* The Beagle was anchored for two weeks at Swan Point, the north-western headland of King Sound (Whittell 1954, p. 101), the type specimens may have been obtained there, see discussion on p. 112.

Emblema picta Gould

Painted Finch

Emblema picta Gould, Birds Aust. III, 1842, pl. 97—North-west coast of Australia.

Seven specimens (Table LXIV).

Irides white, maxilla black with waxred tip, mandible red with pale blue base, legs flesh colour. Specimen no. A 8183 is beginning its wing moult, the other specimens are not in moult, their plumage is somewhat abraded. The immature male has the red confined to the lores and round the eyes, the throat is black.

The habitat of this finch agrees with that of *Amytornis striatus whitei*, e.g. rocky outcrops in and at the edge of spinifex-country. In such places it is common, occurring in pairs or in small flocks of up to about twenty specimens. The birds are apparently not fond of getting wet: on a rainy day I flushed several parties from small caves where they had evidently been sheltering.

Discussion. No races are recognizable (Keast 1958e). I take this opportunity to point out that Keast in the paper just referred to apparently overlooked *Aegintha temporalis cardwelli* Mathews (1942) from Cardwell, Queensland. I mention the fact so that *cardwelli* may be interred alongside Mathews's other follies in the synonymy of *Estrilda temporalis*. According to Keast, birds from Cardwell are intermediate between the nominate race and *minor*.

Whittell & Serventy (1948, p. 99) and Keast (1958e) have united this species with others in the genus *Zonaeginthus*, but *Emblema* Gould 1842, of which *E. picta* is the type species, has nine years priority over *Zonaeginthus* Cabanis 1851, and must be used instead.

As Keast (1958e, p. 221, footnote) has pointed out, *Emblema* is not preoccupied by *Amblema* the facts being as follows: Iredale (1930) gave the generic name *Cayleya* to replace *Emblema*, an action he tried to justify as follows: "When Gould introduced . . . his generic name, he was unaware that there was any prior use, but it has long been known that Rafinesque had proposed *Amblema*. I noted that Deshayes, in 1840 (Dict. Univ. d'Hist. Nat. (Orbigny), Vol. I., p. 334) proposed *Emblema* as a better spelling than *Amblema* and this unfortunately invalidates Gould's name." I checked the reference (d'Orbigny 1849) and found that the name *Emblema* is mentioned not intentionally to replace *Amblema*, but only as a matter of literary interest: "AMBLÈME. *Amblema* (plutôt *Emblema* d'" $\epsilon\mu\beta\lambda\eta\mu\alpha$, graffe; ouvrage de divers morceaux)." The way this is put shows clearly enough that *Emblema* was not intended for use in zoological nomenclature, so that Iredale's argument is invalid.

Recently I have received Steiner's (1960) paper in which the Painted Finch is listed as *Emblema picta*, and the genus *Zonaeginthus* is retained for *oculatus* and *bellus*. Personally I agree with other Australian authors that these three species are congeneric. I cannot help commenting on some other points in the work of Steiner, who evidently follows an unusual system of nomenclature. How otherwise can it be explained that he recognises a tribus *Chloromuniae* and a genus *Chloromunia* Mathews 1923,

with as subgenera *Erythrura* Swainson 1837, *Trichroa* Reichenbach 1862, and four others that have priority over *Chloromunia*? *Chloromunia* Mathews (1923) was proposed as a new name for *Trichroa* Reichenbach, allegedly preoccupied by *Trichrous* Chevalot 1858, and therefore is a still-born synonym of *Trichroa*. Moreover Mathews (1931, p. 472) discovered that *Lobospingus* De Vis is another older name for his *Chloromunia*, being based on the same species.

Poëphila guttata castanotis (Gould)

Zebra Finch

Amadina castanotis Gould, Synops. Birds Aust. pt. I, 1837 (Jan.)—Interior of New South Wales.

Six specimens (Table LXV).

Common, particularly along creek beds and in other bushland surrounded by open country.

According to Keast (1958e) there is no geographical variation in Australia, and I follow him without comment. Lack of literature has prevented me from checking if Whittell & Serventy (1948) are right in rejecting the name *guttata* as preoccupied, hence I maintain it for the moment.

Grallina cyanoleuca (Latham)

Peewee

Corvus cyanoleucus Latham, Index Orn., Suppl., 1801, p. xxv—Sydney, New South Wales (reference copied).

Two specimens (Table LXVI).

Irides greenish yellow, maxilla white with blackish nostrils and tip, mandible white, legs dark. Weights, A 8275, 60 g; A 8274, 87 g. No moult, A 8275 in somewhat worn plumage, A 8274 fairly fresh.

The difference in size between the two specimens is remarkable.

As has been pointed out by Amadon (1950); no races are recognizable.

Artamus leucorhynchus leucopygialis Gould

White-breasted Woodswallow

Artamus leucopygialis Gould, Birds Aust. II, pl. 33, 1842—South Australia and New South Wales.

Artamus leucorhynchus parvirostris Hartert, Novit. Zool. 6, 1899, p. 424—Cape York Peninsula.

Artamus leucorhynchus harterti Mathews, Novit. Zool. 18, 1912, p. 367—North-West Australia, restricted to Parry's Creek by Mathews (1924, p. 166).

Artamus leucorhynchus melvillensis Mathews, Aust. Avian Rec. 1, 1912, p. 45—Melville Island, Northern Territory.

Three specimens (Table LXVII).

Irides brown; bill pale blue, tip black; legs blue-grey to dark blue-grey; no moult, specimen A8139 in fresh plumage, the two others in slightly worn plumage.

Fairly common near Millstream Homestead, where it associated with *A. cinereus* from which species it seemed not to differ in its habits. I noticed that during rainy weather birds would perch much more often than with fine weather. The clustering of the perched birds is remarkable; usually they would associate in small groups of three or four in close contact.

Discussion. The Australian populations of the species were revised by Keast (1958d), who considered it possible to recognise a smaller northern

race, besides the southern *leucopygialis*. The wing measurements of additional specimens in our collection are:

Lavendall Island ..	♂: 133
Hermite Island	♀: 132, 133
Barrow Island	♂: 131, 136; ♀: 129, 138 sex?: 135
Port Hedland ..	♂: 132; ♀: juv.: 130
Lewis R., N.W.A. ..	♂: 132, 133, 134
Fitzroy R.	♂: 131; ♀: 127, 132
South Alligator R., N.T.	♂: 127, 129, 130

As Keast (l.c.) gives for the largest population of New South Wales a maximum of 138 mm, it is apparent that specimens of the north-west can be just as large. Admittedly I have not seen topotypical *parvirostris*, but Gyldenstolpe (1955, p. 293) records a specimen from Cardwell, north Queensland, with a wing of 137 mm. I conclude that though specimens from the Kimberley Division and the Northern Territory apparently average slightly smaller, no excuse exists for maintaining *parvirostris*, a conclusion also arrived at by Gyldenstolpe. Keast does not state to which of the two races recognised by him he reckons the New Guinea specimens to belong; he only writes that they "are similar to the Australian form".

Mayr & Rand (1937, p. 184-185) and Junge (1939, p. 2-3) concluded that the New Guinea birds are identical with those from Australia, and therefore called them *leucopygialis*, but recently the discussion of the validity of *papuensis* was re-opened by Gyldenstolpe (1955, p. 293-294) who thought that it could be maintained on the basis of colour characters: "by having the upper parts of the body markedly more grayish, less brownish. In addition, they have the colour of the chin and throat grayish without any brownish tinge as is the fact in those Australian skins which have been available".

From the Leiden Museum I received five fresh-looking skins from New Guinea on loan for comparison with our Australian material and I found that as regards coloration they are identical. There is a certain amount of individual variation in specimens from any one locality; particularly the colour of the throat may vary from dark grey to brownish grey. As regards the more brownish colour of the upper parts found in some birds, Gyldenstolpe himself had suggested that this might be due to foxing. Actually foxing apparently only slightly affects the skins but old specimens are slightly more brownish, and are less dark on the forehead, than fresh skins, and also their bills are paler, more greenish blue.

The measurements of the New Guinea specimens examined are:

Alkmaar	♂: 129, ♀: 114, ? : 121	(wings of ♀ and sex ? strongly abraded)
Etnabaai	♂: 136	
Pionierbivak, Mamberamo River,	♂: 135	

For additional measurements I refer to Mayr & Rand (1937) and Junge (1939). Evidently the specimens from south New Guinea are small, they have also smallish bills and are apparently even smaller than Northern Territory birds (cf. Junge's measurements), but as Junge pointed out, the difference is too slight to warrant recognition. In my opinion the validity of the race *leucopygialis* itself requires confirmation, it is very close to the nominate race.

Artamus personatus (Gould)

Masked Woodswallow

Ocypterus personatus Gould, Proc. Zool. Soc. Lond. 8, (1840), 1841, p. 149—Southern and Western Australia.

Artamus gracilis Ingram, Bull. Brit. Orn. Cl. 16, 1906, p. 105—Alexandra, Northern Territory (reference copied).

One specimen (Table LXVIII).

Irides light brown, bill milky blue, legs grey, weight 35 g, no moult, plumage fresh, only tips of rectrices slightly abraded.

Apparently uncommon. I have not observed this species.

No geographic variation exists in the species (Keast 1958d). As Keast omitted mentioning the name *Artamus gracilis* Ingram, I list it here in the synonymy.

Artamus cinereus melanops Gould

Black-faced Woodswallow

Artamus melanops Gould, Proc. Zool. Soc. Lond. 1865, p. 198—St. Becket's Pool, lat. 28° 30', Central Australia.

Four specimens (Table LXIX).

Irides brown, bill pale bluish, tip black, legs dark grey. No moult, plumage slightly abraded. Narrow white edges to the black under tail coverts are present.

Common everywhere in half open country where they would gather in exposed places and every now and then soar out to catch insects on the wing. I did not see them perch as close together as *A. leucorhynchus*.

Keast (1958d) recognised, besides some forms in Queensland which do not concern us, a large southern race (*tregellasi*) and a small northern one (*melanops*).

The measurements of specimens in the Western Australian Museum, from north-east to south are:

S. Alligator River, N.T.	♂: 118½
Eureka, N.T.	♂: 121, 122
Canning Stock Route, Wells 28 and 32	♂: 118, 119
Abydos Stn. (Fortescue R.)	♂: 121
Roebourne	♀: 115
Barrow Island	♀: 125
Ashburton R.	♂: 122
Milly Milly	—: 123
Sullivan's Creek (Murchison)	—: 118
40 miles N.E. Three Rivers (Murchison)	—: 119
Day Dawn	♂: 113, 120, 123, 124, 124
Yalgoo	♂: 127
Coorow	♂: 129
Kellerberrin	♂: 125, 128
Perth	♂: 129
Jandakot	♀: 125

These measurements confirm the validity of *tregellasi* as a slightly larger race of the south-west. On the evidence at present available it seems best to draw the boundary line of the two races between Day Dawn (Murchison) and Yalgoo, with which I do not, however, suggest that such a sharp line can actually be drawn.

The specimen received recently from Barrow Island (A 8158) shows that this is not strictly a species of the interior as Mathews (1922-1923, p. 255) and Keast (1958d) claim. It also disposes of Mathews's argument in favour of regarding *Artamus cinereus Vieillot* from Timor as a separate species. Incidentally, the type of

tregellasi came from Rockingham on the coast, and Jandakot cannot possibly be called an interior locality either.

Artamus minor Vieillot

Little Woodswallow

Artamus minor Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed. XVII, 1817, p. 298—New South Wales (reference copied*).

Eight specimens (Table LXX).

Irides brown, bill turquoise, legs dark grey, scutes black. None of the specimens shows moult.

This little woodswallow seemed to favour a more open habitat than its congeners. It was particularly common in open rocky country with only dispersed small trees. None of the other species especially favours rocky country. The five males were taken by Mr. Douglas, who took them for bats, in one shot from a cluster of six in a shallow cave. It is interesting that they are all of the same sex.

Discussion. The species shows no geographical variation (Keast 1958d).

Cracticus nigrogularis nigrogularis (Gould)

Butcher Bird

Vanga nigrogularis Gould, Synops. Birds Aust. I, 1837 (January)—New South Wales.

Cracticus nigrogularis kalgoorli Mathews, Novit. Zool. 18, 1912, p. 374—Kalgoorlie, West Australia.

For further synonyms, see Amadon (1951).

Two specimens (Table LXXI).

Irides dark brown, bill pale bluish with black tip, legs blackish grey. No moult, gonads well developed.

Not uncommon in the region.

Discussion. The species was revised by Amadon (1951) but since my conclusions differ in some points from his, I have to discuss it again in some detail.

Amadon recognised three races, *nigrogularis*, *kalgoorli* (Western Australia) and *picatus* (northern Australia); though admitting that *kalgoorli* is a slight race, which is very close to the nominate race, he retained it on the basis of a difference in bill-size, the figures in his Table 7 showing a culmen length of 40-48 (45) for 8 males and 42 for one female from New South Wales, Victoria, and South Australia (*nigrogularis*); and of 49-52 (50) for 9 males, 46-47 (47) for 5 females ascribed to *kalgoorli*.

The measurements of material in the Western Australian Museum are:

sex	locality	wing	culmen
?	New South Wales	181	44½
♀	Morawa	177	44½
♀	50 m. N.W. of Lake Way	182	46
♂	50 m. N.W. of Lake Way	187	49
♂	50 m. N.W. of Lake Way	182	43
♀	The Gap, Nannine ..	180	46
?	Mingenew	188	50
♂	Wyalkatchem ..	178	44½
♂	Ashburton R.	184	47½
?	Winding Creek	182	43½

* The type locality Sydney as designated by Mathews (1924, 1931) must be incorrect as this species of rocky places in arid regions does not occur in the neighbourhood of that town (cf. Hindwood & McGill 1958, p. 115).

This gives, with the two specimens listed above, a range of variation from 43-50 mm and an average of 46.2 mm, as compared to, according to Amadon, 40-48 for 9 specimens from New South Wales, Victoria and South Australia, and 41-49 for 20 specimens from Queensland. The difference in mean bill length of 1½ to 2 mm, moreover measured on small samples, is evidently not sufficient to warrant recognition of a separate western race, particularly not as the variation in one locality (Lake Way) in birds of the same sex can be as much as 6 mm.

Amadon assigned specimens from the East Kimberley Division to *picatus*, but included the West Kimberley Division in the range of "*kalgoorli*", an opinion apparently based on one male specimen from Point Torment with a wing-length of 183 mm. The distribution as asserted by him is very unusual, as in other size races or populations the boundary is the desert between the Pilbara District and the Kimberley Division, and our material does not lend support to his opinion. Our material of *picatus* consists of the following specimens:

sex	locality	wing	culmen
♂	Brock Creek, N.T.	161	39
♂	Brock Creek, N.T.	168	41
♀	Brock Creek, N.T.	162	39
♂	Wotjululum	152	39½ (plumage abraded)
♂	Wotjululum	164	44

Wotjululum is in the West Kimberley Division very close to King Sound and Point Torment, and the two males from there agree in every respect with *picatus* from the Northern Territory, so that the range of that race must be extended to include the whole Kimberley Division. I suggest that Amadon's single specimen from Point Torment may be aberrant, or may have been a straggler, or may have been incorrectly labelled, or that perhaps confusion with Point Torment in Queensland may have occurred.*

Gymnorhina tibicen longirostris Milligan Magpie.

Gymnorhina longirostris Milligan, Emu 3, 1903, p. 96.
—Ashburton River, North-Western Australia.

Two specimens (Table LXXII).

Irides bright orange brown, bill pale blue with large black tip, legs black. Weight of male 260 g, of female 230 g. The female was taken with a nest of four eggs. Testes of male very large, 22½ × 13 and 20 × 14½ mm.

Apparently uncommon, the pair collected were the only specimens encountered.

Discussion. *Gymnorhina tibicen longirostris*, of which the type is in the Western Australian Museum, is a well-marked subspecies as all recent reviewers agree (Amadon 1951, Condon 1951b).

* Material recently (May-June, 1960) collected at La Grange and Derby shows that my criticism of Amadon is unjustified and that specimens from Derby are large and belong to the nominate race. Particulars will be given in a future paper.

Chlamydera guttata Gould

Spotted Bowerbird

Chlamydera guttata Gould, Proc. Zool. Soc. Lond. 1862, p. 162—North-western Australia.

Two specimens (Table LXXIII).

Irides sepia, bill black, legs dark grey.

Not common, found in wooded rocky country near water.

Discussion. Mathews (1931), with unusually good judgment, had placed his races *subguttata*, *macdonaldi* and *carteri* (= *nova*) in the synonymy, in which he was followed by Mayr & Jennings (1952). My material is very scanty, but it supports the conclusion that there is no geographic variation in the species.

Corvus bennetti North

Little Crow

Corvus bennetti North, Vict. Nat. 7, 1901 (10 January), p. 170—Moolah, Western New South Wales.

One specimen (Table LXXIV).

Corvus orru ceciliae Mathews

Crow

Corvus coronoides ceciliae Mathews, Novit. Zool. 18, 1912, p. 442—North-West Australia, precised as Napier Broome Bay by Mathews (1924).

Three specimens (Table LXXV).

Irides white in all specimens, bill and legs black. No moult.

Discussion. Stresemann (1943) placed *ceciliae* as a race of *C. orru*, specifically separating it from *C. coronoides*, in which he was followed by Vaurie (1958). Personally I am not convinced that *C. orru* and *C. coronoides* are not conspecific. The voices of the two have much in common, and as regards the supposed overlap in range between *ceciliae* and *coronoides* it is interesting to note Serventy & Whittell's (1951) statement that in Western Australia the ranges of the two are probably mutually exclusive. Since I have not been able to make an extensive study of this difficult group, and since Serventy & Whittell believe that there is a difference in voice between *ceciliae* and *coronoides* (which I have not been able to hear, but my field experience with *ceciliae* is insufficient), it seems for the moment safest to follow the latest revisers.

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DATA ON INDIVIDUAL SPECIMENS

TABLE I

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8007	♀	Tambrey	3.VIII	110	....	32	27	21½	15½

TABLE II

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8385	♂	Millstream	4.VIII	258	126	49	damaged	....	....

TABLE III

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.
A 8276	♂	Millstream	19.VII	348	217	46½	76

TABLE IV

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.
A 8282	♂	Millstream	4.VIII	178	136	....	83

TABLE V

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.
A 8277	♂	Millstream	19.VII	298	104	79	....	71

TABLE VI

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.
A 8270	Millstream	4.VIII	382	144	92	174

TABLE VII

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.
A 8106	♂	Millstream	2.VIII	261	86	44	57
A 8105	♀	Millstream	2.VIII	245	77	43	49

TABLE VIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Cul. from cere
A 8180	♀	Coolawanyah	27.VII	420	247	52	25

TABLE IX

No.	Sex	Location	Date	Wing	Tail	Tars.	Cul. from cere
A 8179	♀	Millstream	20.VII	435	270	61	26½

TABLE X

No.	Sex	Location	Date	Wing	Tail	Tars.	Cul. from cere
A 8178	♀	Millstream	21.VII	583	320	123	47¼

TABLE XI

No.	Sex	Location	Date	Wing	Tail	Tars.	Cul. from cere
A 8177	♂ imm.	Tambrey	1.VIII	318	184	69	20½
A 8173	♀	Millstream	22.VII	331	187	67	20
A 8176	♀	Tambrey	4.VIII	362	203	68	23
A 8174	....	Millstream	22.VII	358	205	70	24
A 8175	....	Tambrey	29.VII	327	176	64	20

TABLE XII

No.	Sex	Location	Date	Wing	Tail	Tars.	Cul. from cere
A 8107	♂	Tambrey	31.VII	133	135	37	13¼

TABLE XIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.
A 8286	♂	Tambrey	1.VIII	112	56	24½	15
A 8285	Millstream	19.VII	112	55	23½	16

TABLE XIV

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.	Wt.
A 8135	♀	Millstream	19.VII	106	94	18½	13	48g
A 8136	♀	Millstream	19.VII	104	91	17	13	44g

TABLE XV

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.
A 8284	Millstream	28.VII	91	103	13¼	10

TABLE XVI

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.	Wt.
A 8127	♀	Millstream	19.VII	193	105	27	20	280g

TABLE XVII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.
A 8108	♂	Millstream	21.VII	205	73	26	23½	17½
A 8109	♂	Millstream	26.VII	206	69	25	24¾	19¾

TABLE XVIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.
A 8125	♂	Coolawanyah	30.VII	167	137	....	14
A 8124	+	Millstream	21.VII	166	139	25½	13
A 8126	+	Tambrey	29.VII	155	134½	24	13¾

TABLE XIX

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8001	♂	Millstream	18.VII	112	59	22	18	15	11
A 8002	+	Millstream	18.VII	109	61	20½	19	15	11
A 8003	+	Tambrey	1.VIII	109	61	22	17½	13	10½

TABLE XX

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.	Cul. depth
A 8114	+	Millstream	19.VII	279	139	24	30½	17½
A 8115	+	Tambrey	3.VIII	262	139	25	30¾	18

TABLE XXI

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.	Depth cul.
A 8118	♂	Millstream	28.VII	259	147	20	25¼	16
A 8117	+	Millstream	28.VII	266	144	20½	27	15

TABLE XXII

No.	Sex	Location	Date	Wing	Tail	Tars.	Cul. from forehead
A 7971	♂	Millstream	17.VII	161	194	19	23
A 7975	♂	Millstream	26.VII	166	199	21	25
A 7976	♂	Tambrey	1.VIII	165	192	19	24¾
A 7972	+	Millstream	20.VII	164	195	20¼	23
A 7973	+	Millstream	20.VII	167	205	20	22¾
A 7974	+	Tambrey	1.VIII	166	200	20½	24

TABLE XXIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Cul. from forehead feathers	Cul. from cere	Wt.
A 8264	♂	Tambrey	1.VIII	97	99	12	12 $\frac{1}{4}$	9 $\frac{1}{4}$	29g
A 8265	♂	Tambrey	1.VIII	95	91	11 $\frac{1}{4}$	12 $\frac{1}{4}$	8 $\frac{3}{4}$	27g
A 8266	♂	Tambrey	1.VIII	97	90	11 $\frac{1}{4}$	12 $\frac{3}{4}$	10	26g
A 8267	♂	Tambrey	1.VIII	95	91	12	12	9 $\frac{1}{2}$	27g
A 8268	♂	Tambrey	1.VIII	94	88	11 $\frac{1}{4}$	12	9 $\frac{1}{2}$	26g

TABLE XXIV

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 7982	♂	Millstream	27.VII	198	157	20	29	20	16 $\frac{1}{2}$
A 7981	♂	Tambrey	3.VIII	195	163	19 $\frac{1}{2}$	28	20	16 $\frac{1}{4}$

TABLE XXV

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 7983	♂	Millstream	25.VII	97	65	17	17	11 $\frac{1}{2}$	10

TABLE XXVI

No.	Sex	Location	Date	Wing	Tail	Wt.
A 8361	♀	Tambrey	31.VII	232	133	250g
A 8362	♀	Tambrey	4.VIII	226	134	....

TABLE XXVII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.
A 8379	♂	Mt. Herbert	24.VII	129	116 $\frac{1}{2}$	....	....
A 8380	♂	Tambrey	30.VII	135	123	24	15 $\frac{1}{2}$

TABLE XXVIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8013	♂	Millstream	19.VII	212	146	20	20	7	7
A 8014	♂	Mt. Herbert	21.VII	217	150	19	22	8	7 $\frac{1}{4}$
A 8015	♀	Millstream	26.VII	222	144	....	22	9	7

TABLE XXIX

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8004	♂	Millstream	19.VII	203	134	29	81	65	67
A 8005	♂	Millstream	19.VII	210	132	28	78	66	64
A 8006	♂	Millstream	4.VIII	205	130	30 $\frac{1}{2}$	79 $\frac{1}{2}$	68	64

TABLE XXX

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8058	♂	Tambrey	1.VIII	110	65½	15¼	43	38½	34¾
A 8059	♂	Tambrey	4.VIII	103	69	15	44½	38	35½
A 8056	♂	Millstream	19.VII	103	67	15	44	38	34¾
A 8057	juv.	Tambrey	1.VIII	100	67	15	41	36¾	33¼

TABLE XXXI

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8229	♀	Millstream	21.VII	104	82	11½	48	42	39

TABLE XXXII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8031	♂	Millstream	24.VII	80	49	23¼	14½	12	9¾
A 8032	♂	Coolawanyah	30.VII	78	53	23	14½	11	9¼
A 8034	♂	Coolawanyah	30.VII	79	52½	...	14	12	9¼
A 8035	♂	Coolawanyah	30.VII	77	48	20¾	13¾	11¾	9¼
A 8033	♂	Coolawanyah	30.VII	73	47	22½	14¼	12	9

TABLE XXXIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8262	♂	Tambrey	1.VIII	102	43	...	11	6	5¼
A 8263	♂	Tambrey	1.VIII	99	42	10¼	8¼	6¼	5
A 8260	♂	Millstream	20.VII	97	40	...	9¾	5½	4½
A 8261	♂	Tambrey	1.VIII	102	46	12	11½	6½	5½

TABLE XXXIV

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8081	♂	Roy Hill	11.VII	87½	60	25	16	11¾	9½
A 8085	♂	Millstream	21.VII	88	59½	24	15	12¾	9¾
A 8084	♂	Tambrey	29.VII	84½	58½	24	16¾	12½	10
A 8083	juv.	Tambrey	29.VII	...	...	...	...	...	...
A 8082	juv.	Millstream	24.VII	...	...	...	...	...	...

TABLE XXXV

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8112	(♂)	Millstream	21.VII	104	81	20¾	15¼	12¼	10
A 8113	♂	Millstream	22.VII	95	72	19	16¼	12¼	10¼

TABLE XXXVI

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8119	♂	Millstream	17.VII	193	145	28	34	25	20
A 8122	♂	Tambrey	29.VII	197	143	30	30½	24½	20
A 8123	♂ imm.	Millstream	23.VII	186	139	26¾	29	24	20
A 8120	+	Mt. Herbert	24.VII	188	147	29	27	21½	18½
A 8121	+	Mt. Herbert	25.VII	201	142	29	28¼	23	19

TABLE XXXVII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8066	♂	Millstream	19.VII	103	101	29	31	25½	20
A 8067	+	Millstream	19.VII	110	105	33	35	31	25

TABLE XXXVIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8009	♂	Millstream	19.VII	76	67	26	20	14¾	12
A 8008	♂	Millstream	19.VII	78	66	24	21½	15	12
A 8012	♂	Millstream	24.VII	77	68	25½	20	15	12
A 8010	+	Millstream	20.VII	73	60½	26	21½	15¼	12
A 8011	...	Millstream	22.VII	72	62	24½	20	14½	11

TABLE XXXIX

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8226	♀	Millstream	22.VII	48½	49	18½	12¼	10	7½
A 8227	+	Millstream	24.VII	45	44	18¼	12	9½	7¼

TABLE XL

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8203	♂	Tambrey	28.VII	54	41	18	11	8½	6
A 8201	+	Tambrey	28.VII	56	39½	16½	11¼	8¼	5¾
A 8202	+	Tambrey	28.VII	57½	42	17	11¼	8	6

TABLE XLI

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8204	♂	Millstream	19.VII	50½	34	16	8½	6	4
A 8205	♂	Millstream	19.VII	50½	31½	16	8¼	6	4
A 8206	♂	Tambrey	1.VIII	50	31½	15	...	...	...
A 8207	+	Millstream	18.VII	50	31½	15	8¼	6	4
A 8203	?	Millstream	17.VII	49	29	15	8	6¼	4

TABLE XLII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8080	♂	Millstream	21.VII	89	75½	25½	17	13½	10
A 8078	♂	Millstream	19.VII	80	68	25	.....	.....	.....
A 8079	♂	Millstream	19.VII	91	75	31	17½	14	10
A 8077	♂	Millstream	26.VII	77	67	23½	15	12	9½

TABLE XLIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8246	♂	Tambrey	2.VIII	54½	67	14½	14	11	8¼
A 8248	♂	Tambrey	4.VIII	55½	60	14¾	15½	11¼	8½
A 8249	♂	Tambrey	5.VIII	55	65	15	15¼	11	8½
A 8244	♂	Tambrey	1.VIII	55	63	15	14	11½	9¼
A 8247	♂	Tambrey	2.VIII	55	58	15	.....	.....	.....
A 8250	♂	Tambrey	5.VIII	57	66½	15¼	14½	11½	8¼
A 8245	♂	Tambrey	1.VIII	55	66	14¼	15½	12½	8¾

TABLE XLIV

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8164	♂	Mt. Herbert	25.VII	62½	83½	25½	16	12	9
A 8159	♂	Millstream	25.VII	64	74	25¼	15	12½	8½
A 8161	♂	Tambrey	3.VIII	63	80	25	15¼	11½	9
A 8165	♂	Tambrey	28.VII	60	76	23	15	12¼	9
A 8160	♂	Tambrey	3.VIII	62	73	25¼	16¼	13	8¾
A 8166	♂	Tambrey	5.VIII	61	80	24¾	16	12¼	8½

TABLE XLIVa

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
AMNH 598110	♂	Borewell	31.VII. 1909	64	85	23½	14¼	11	8
AMNH 598114	♂	Borewell	5.VIII.1909	57	76	23¼	12½	10½	7¼
AMNH 598115	♂	Borewell	5.VIII.1909	61	81	23¼	14	11¾	8¼
AMNH 598113	♂	Borewell	6.VIII.1909	58	81½	24	14	10¾	8
AMNH 265500	♂	Borewell	5.IX. 1909	58	76	23½	14	12	8¾
A 5859	♂	Well 48	27.VI. 1943	61	.....	22½	13	10	8
A 5861	♂	Well 48	20.VII. 1943	57	82	22½	13½	11	7¾
A 5863	♂	Well 48	24.VII. 1943	58	79	24¼	13½	10¼	8¼
A 5867	♂	Well 48	24.VII. 1943	58	81	23¼	13¼	10¾	8
A 5866	♂	Well 48	10.VIII.1943	60½	85	23	13	10	7½
A 4034	♂	Well 35	27.X. 1930	59	76	22½	13	11	7¾
A 5860	♂	Well 48	22.VI. 1943	58	77	22	14	11	8¼
A 5862	♂	Well 48	3.VII. 1943	59	77½	22	12½	10	7¼
A 5856	♂	Well 48	23.VII. 1943	57	.....	23	13	10½	7½
A 5864	♂	Well 48	24.VII. 1943	56	78½	22½	12½	9½	7

<i>whitei</i> (6) ....	.....	.....	.....	62.1	77.8	24.8	15.6	12.3	8.8
<i>oweni</i> (5) ....	.....	.....	.....	59.6	79.9	23.5	13.8	11.2	8.1
<i>rufus</i> (10)....	.....	.....	.....	58.4	79.5	22.8	13.1	10.4	7.7

TABLE L

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8137	♂	Millstream	24.VII	75	88	16	12	6 $\frac{3}{4}$	5 $\frac{1}{4}$
A 8138	♂	Tambrey	1.VIII	72 $\frac{1}{2}$	63	16 $\frac{3}{4}$	11 $\frac{1}{2}$	6 $\frac{1}{2}$	5

TABLE LI

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 7984	♂	Mt. Herbert	24.VII	97	101	25 $\frac{1}{2}$	16 $\frac{3}{4}$	11 $\frac{1}{4}$	9 $\frac{3}{4}$
A 7986	♂	Tambrey	28.VII	99	99	24	17 $\frac{1}{4}$	11	9 $\frac{1}{4}$
A 7988	♂	Tambrey	31.VII	101	104	25	16 $\frac{1}{2}$	10 $\frac{1}{4}$	8 $\frac{3}{4}$
A 7987	♂	Millstream	19.VII	99	105	24 $\frac{1}{2}$	17	10 $\frac{1}{4}$	9
A 7985	♂	Tambrey	29.VII	100	107	25 $\frac{1}{4}$	15 $\frac{1}{2}$	11	9 $\frac{1}{2}$

TABLE LII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8097	♂	Millstream	21.VII	94	70	21 $\frac{1}{2}$	14 $\frac{3}{4}$	10	8 $\frac{3}{4}$
A 8096	♂	Tambrey	3.VIII	94	69	22	....	....	....
A 8094	♂	Marillana	12.VII	87	67	22 $\frac{1}{2}$	15 $\frac{1}{4}$	12 $\frac{1}{2}$	9
A 8095	♂	Millstream	22.VII	88	68	22	15 $\frac{3}{4}$	12 $\frac{1}{4}$	9
A 8098	♂	Millstream	22.VII	93	70	22	15 $\frac{1}{2}$	12 $\frac{3}{4}$	9 $\frac{3}{4}$

TABLE LIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8061	♂	Wittenoom	15.VII	121	100	30	26 $\frac{1}{4}$	20 $\frac{3}{4}$	15 $\frac{1}{2}$
A 8062	♂	Millstream	19.VII	119	96 $\frac{1}{2}$	30 $\frac{3}{4}$	27 $\frac{1}{2}$	20	16
A 8063	♂	Millstream	19.VII	120	102	31	25	21 $\frac{1}{2}$	15 $\frac{1}{4}$
A 8064	♂	Mt. Herbert	24.VII	118	97	30 $\frac{1}{2}$	25 $\frac{1}{4}$	20 $\frac{1}{2}$	15 $\frac{1}{4}$
A 8065	♂	Millstream	26.VII	118	97	30 $\frac{3}{4}$	25 $\frac{1}{2}$	21 $\frac{1}{4}$	15

TABLE LIV

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8366	♂	Tambrey	2.VIII	108	83	28	20 $\frac{1}{4}$	18	12 $\frac{3}{4}$
A 8368	♂	Tambrey	3.VIII	106	85	26 $\frac{3}{4}$	19	....	12
A 8367	♂	Tambrey	2.VIII	102	71	28	19	15 $\frac{1}{2}$	11

TABLE LV

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8100	♂ (♂ ₁ ♂ ₂) ♂ ₃ ♂ ₄ ♂ ₅ ♂ ₆ ♂ ₇ ♂ ₈ ♂ ₉ ♂ ₁₀ ?	Tambrey	1.VIII	95	62	23½	17¼	15	12
A 8104		Tambrey	28.VII	93	61	22¼	16	13	11
A 8101		Tambrey	1.VIII	96	63	22¾	19	15	12
A 8103		Millstream	19.VII	92	61	23	17¾	14	12
A 8102		Tambrey	1.VIII	93	59	22½	18¼	13¾	12
A 8099		Millstream	26.VII	88	63½	22	18¼	15	12½

TABLE LVI

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8235	♂ ♂ ♂ ♂ ?	Tambrey	27.VII	62	30½	18	10	7¼	5
A 8233		Tambrey	28.VII	62	28½	19	10¼	7¼	5
A 8236		Tambrey	28.VII	62	28½	19	8	6	5
A 8234		Tambrey	29.VII	65	31	19¼	10¾	6¾	5
A 8232		Millstream	19.VII	62½	33½	19	10¼	6¼	5

TABLE LVII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8230	♂ ♂	Dale Gorge Creek	13.VII	63	29	20¼	11	7¾	6
A 8231		Mt. Herbert	24.VII	62	31½	21	10½	7	5¾

TABLE LVIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8068	♂ ♂ ♂ ♂ ♂	Millstream	22.VII	88	63	20	17¾	14	10
A 8069		Millstream	24.VII	85	62½	19¾	16¾	12½	9½
A 8110		Mt. Herbert	25.VII	81	61	20	16¼	13¼	9¾
A 8070		Millstream	24.VII	86½	63	19½	17	13½	10
A 8111		Mt. Herbert	25.VII	83	58½	19	17	14	10

TABLE LIX

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8208	♂ ♂ ♂ ♂ ♂ ♂ ♂ ♂ ♂	Millstream	21.VII	68½	51½	17	19½	15¾	10¾
A 8210		Millstream	22.VII	67	51	18	18½	14½	10½
A 8211		Mt. Herbert	25.VII	73	60	19	19¼	15	9½
A 8212		Mt. Herbert	26.VII	62	46	16	18	14½	9
A 8214		Tambrey	31.VII	68	53	16	18½	15	10¼
A 8213		Tambrey	28.VII	60	46	15¾	16	12¾	8½
A 8215		Tambrey	31.VII	61	49	15½	16¾	14	9
A 8209		Mt. Herbert	24.VII	63	51	17¾	17	13	8½

TABLE LX

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
				<i>forresti</i>					
7729*	♂	Lewis Island	27.VI. 1902	96	81	26	22	16 $\frac{1}{4}$	11
A 8023	♂	Barrow Island	18.XI. 1958	82	73	23 $\frac{1}{4}$	18 $\frac{1}{2}$	14	9 $\frac{1}{4}$
A 8027	♂	Barrow Island	21.IX. 1958	94	82	25	20 $\frac{1}{2}$	15 $\frac{1}{2}$	10
A 8028	♂	Barrow Island	20.IX. 1958	82	72 $\frac{1}{2}$	21	18 $\frac{3}{4}$	15	10
A 8022	♂	Barrow Island	18.IX. 1958	84	76	22 $\frac{3}{4}$	18	13	8
A 8029	♂	Barrow Island	21.IX. 1958	84	70	24 $\frac{1}{2}$	19	13 $\frac{3}{4}$	8
A 8021	♂	Onslow	16.IX. 1958	93	80 $\frac{1}{2}$	25 $\frac{1}{4}$	19 $\frac{3}{4}$	15 $\frac{3}{4}$	10
A 8228	♂	Millstream	26.VII. 1958	83	73	24 $\frac{3}{4}$	18 $\frac{3}{4}$	14	9 $\frac{1}{2}$
A 8018	♂	Millstream	28.VII. 1958	82 $\frac{1}{2}$	72	22	19	13 $\frac{1}{2}$	9
A 8019	♂	Tambrey	31.VII. 1958	82	76	22 $\frac{1}{2}$	18 $\frac{3}{4}$	14	9 $\frac{1}{2}$
A 8016	♂	Tambrey	27.VII. 1958	81	75	22 $\frac{3}{4}$	.....	15	10
A 8017	♂	Tambrey	29.VII. 1958	92	80	24	20	16	11
A 8020	imm.	Tambrey	30.VII. 1958	82 $\frac{1}{2}$	73	21 $\frac{1}{2}$	19	14	9 $\frac{3}{4}$
A 8309	juv.	Coolawanyah	30.VII. 1958	81	72 $\frac{1}{2}$	23 $\frac{1}{2}$	19	14 $\frac{1}{2}$	10
7730	♂	Marble Bar	3.IV. 1901	87	75	23	19	14	9
9505	♂	Marble Bar	22.V. 1901	92	90	23 $\frac{1}{2}$	18 $\frac{3}{4}$	15	10
A 4081	♂	Well 50	12.II. 1931	86 $\frac{1}{2}$	78 $\frac{1}{2}$	25 $\frac{1}{2}$	19	14	9 $\frac{1}{4}$
A 4078	♂	Well 37	15.XI. 1930	86	76	22 $\frac{1}{4}$	18	13 $\frac{1}{2}$	9
A 4077†	♂	Well 33	13.X. 1930	89	76	23	21	15 $\frac{1}{2}$	11
A 4074	♂	Well 28	7.VIII. 1930	92 $\frac{1}{2}$	77	24	19	14	10
A 4073	♂	Well 26	15.VII. 1930	87	74	24	17	13	9 $\frac{3}{4}$
9307	♂	Sullivan Creek, Murchison	Feb., 1908	97	88	25	19 $\frac{1}{2}$	15 $\frac{1}{4}$	9 $\frac{1}{2}$
1525	♂	Lawlers, East Murchison	5.XI. 1899	94	80	24 $\frac{1}{4}$	20	15 $\frac{1}{2}$	10
5376	♂	Lake Austin	28.III. 1903	89	77	24	18 $\frac{1}{2}$	14	9 $\frac{1}{2}$
5375	juv.	Lake Austin	15.III. 1903	85	77	24	18 $\frac{1}{2}$	13 $\frac{1}{2}$	8 $\frac{3}{4}$
5378	♂	Lake Austin	16.III. 1903	85	74	22	19	14	11
5377	♂	Lake Austin	26.III. 1903	84 $\frac{1}{2}$	76	23 $\frac{1}{2}$	17	12 $\frac{1}{2}$	8 $\frac{1}{2}$
				<i>forresti—virescens</i>					
A 8396	♂	Carnarvon	11.VIII. 1959	90	82	26	22	17	11
A 8397	♂	Carnarvon	11.VIII. 1959	82	74	23	.....	15 $\frac{1}{4}$	10
A 1215	♂	Carnarvon	21.IX. 1916	82	76	.....	18 $\frac{1}{4}$	14 $\frac{3}{4}$	9 $\frac{1}{4}$
				<i>virescens</i>					
A 8393	♂	North-West Cape	29.VII. 1959	94	82	25	22	15 $\frac{1}{4}$	10
A 8395	♂	North-West Cape	30.VII. 1959	95	82	25 $\frac{1}{2}$	21	17	11
A 8394	♂	North-West Cape	7.VIII. 1959	96	83 $\frac{1}{2}$	25	20	15	10
A 8392	♂	Bernier Island	20.VII. 1959	97	82	27	22	17 $\frac{1}{2}$	11 $\frac{1}{2}$
A 8388	♂	Dorre Island	18.VII. 1959	96	84	26	23	18	11
A 8389	♂	Dorre Island	19.VII. 1959	98	86	24	22 $\frac{3}{4}$	17	11
10539	♂	Dorre Island	10.VIII. 1910	89	84	26	23	17	10 $\frac{1}{2}$
A 8391	♂	Dorre Island	15.VII. 1959	90	80	24 $\frac{1}{4}$	21	16	11
A 8390	♂	Dorre Island	19.VII. 1959	91	82	24 $\frac{3}{4}$	22	17	11 $\frac{1}{2}$
A 1216	♂	Dirk Hartog Island	14.X. 1916	97	87	26	24	18	11 $\frac{1}{2}$
A 2459	♂	Dirk Hartog Island	23.IV. 1922	99	87	26	23	17	10 $\frac{3}{4}$
A 1217	♂	Dirk Hartog Island	12.X. 1916	.....	79	24 $\frac{1}{2}$	22 $\frac{1}{4}$	16 $\frac{3}{4}$	10
A 2458	♂	Peron Peninsula	17.IV. 1922	97	85	26 $\frac{1}{2}$	22 $\frac{1}{2}$	16	11
A 7210	♂	Payne's Find	22.V. 1953	89	82	23 $\frac{1}{2}$	19 $\frac{3}{4}$	14 $\frac{1}{4}$	10
6912‡	♂	Ebano	Oct., 1904	91	85	23 $\frac{1}{4}$	18 $\frac{3}{4}$	14	9
6915	♂	Ebano	Oct., 1904	93	85 $\frac{1}{2}$	24 $\frac{3}{4}$	19	13 $\frac{1}{2}$	9 $\frac{1}{2}$
A 7100	♂	Dandaragan	17.IV. 1953	86	78	23 $\frac{3}{4}$	18 $\frac{3}{4}$	15 $\frac{1}{4}$	10
A 7101	♂	Morawa	15.IV. 1953	92 $\frac{1}{2}$	80	25 $\frac{1}{4}$	20	14 $\frac{3}{4}$	9 $\frac{3}{4}$
A 7102	♂	Morawa	15.IV. 1953	86	78 $\frac{1}{2}$	21 $\frac{1}{2}$	18	14	9 $\frac{1}{2}$
A 7700	♂	Wyalkatchem	7.XI. 1955	93	82	24 $\frac{3}{4}$	19 $\frac{1}{2}$	15	10 $\frac{3}{4}$
6301	♂	Wongan Hills	7.X. 1902	89	81	24 $\frac{1}{4}$	22	15	9 $\frac{1}{4}$
4456	♂	North Beach	14.XI. 1901	91	85	25	22 $\frac{3}{4}$	16	11
4478	♂	South Beach	26.XI. 1901	90	80	25	.....	13	7 $\frac{3}{4}$
8039	♂	Boyadine	29.XII. 1905	97	88	24 $\frac{1}{4}$	.....	.....	.....
8421	♂	Emu Hill	6.VII. 1906	95	81 $\frac{1}{2}$	23 $\frac{1}{4}$	20	16	10 $\frac{1}{4}$
2242	♂	Gracefield	16.V. 1900	98	88	25	21	17	10 $\frac{1}{2}$
1074	♂	Gracefield	June, 1899	98	86	25	20	15 $\frac{1}{2}$	11
5311	♂	Stirling Ranges	Sept., 1902	94	80	24 $\frac{1}{2}$	20 $\frac{1}{4}$	16	11

* Type of *lewisi*.† Type of *lipferti*.‡ Type of *glauerti*.

TABLE LX—continued

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
<i>virescens</i> —continued									
5331		Harvey River	1.X. 1902	101	86	25 $\frac{3}{4}$	....	....	....
3817		Harvey River	15.V. 1902	87	81	24 $\frac{1}{4}$	21 $\frac{1}{2}$	16	11
6653		Harvey River	26.I. 1904	99	89	25 $\frac{1}{4}$	23	17	12
5140		Mandurah	13.IX. 1902	95	81	25 $\frac{1}{4}$	21 $\frac{1}{2}$	16 $\frac{3}{4}$	11
5178		Mandurah	13.IX. 1902	88 $\frac{1}{2}$	76	25	23	18 $\frac{1}{4}$	12
5177		Mandurah	13.IX. 1902	88	79	23 $\frac{1}{2}$	20 $\frac{3}{4}$	15	10
4359		Ellensbrook	Oct., 1901	87	76	24	20	15	10 $\frac{1}{4}$
A 1213		Vasse River	12.II. 1916	97	89	24 $\frac{1}{2}$	21	16	10
10127||		Rottneest Island	15.VII. 1909	98	89 $\frac{1}{2}$	26	23	16 $\frac{1}{2}$	11 $\frac{1}{2}$
10128		Rottneest Island	24.VII. 1909	101	90	27	21 $\frac{1}{2}$	16 $\frac{3}{4}$	11
10130		Rottneest Island	24.VII. 1909	100 $\frac{1}{2}$	91	26	22	15 $\frac{1}{2}$	11 $\frac{1}{4}$
5759		Rottneest Island	13.VII. 1903	99	91	26 $\frac{1}{2}$	21 $\frac{3}{4}$	16	11 $\frac{1}{4}$
6499	O_1 juv.	Rottneest Island	14.XI. 1903	92 $\frac{1}{2}$	85	26	21 $\frac{3}{4}$	15 $\frac{1}{4}$	10 $\frac{1}{2}$
4710	O_1	Rottneest Island	10.II. 1902	91	81	27	20	15 $\frac{1}{4}$	11
5762		Rottneest Island	13.VII. 1903	99	91	26 $\frac{1}{4}$	....	....	....
6498		Rottneest Island	7.XI. 1903	100	89	25 $\frac{3}{4}$	20 $\frac{1}{2}$	15	10 $\frac{1}{2}$
5763		Rottneest Island	13.VII. 1903	98	86	27	22	16	11 $\frac{1}{2}$
5404	O_1 juv.	Rottneest Island	21.IV. 1903	91 $\frac{1}{2}$	79	25 $\frac{1}{2}$	20	14 $\frac{3}{4}$	10 $\frac{1}{2}$
10129	O_1	Rottneest Island	15.I. 1909	98	90	26 $\frac{1}{4}$	20 $\frac{1}{4}$	16	10 $\frac{1}{4}$
4711	....	Rottneest Island	10.II. 1902	96	89	26 $\frac{1}{2}$	20 $\frac{1}{2}$	15 $\frac{1}{4}$	10 $\frac{3}{4}$
6380	....	Rottneest Island	Nov., 1903	99	88	27	22 $\frac{1}{4}$	16 $\frac{1}{4}$	11 $\frac{3}{4}$
6378	....	Rottneest Island	Nov., 1903	95	84	25	18 $\frac{1}{2}$	15	11
4712	....	Rottneest Island	10.II. 1903	89	85	24	18 $\frac{1}{2}$	15	10 $\frac{3}{4}$
5767	O_1	Rottneest Island	13.VII. 1903	92	87	24 $\frac{1}{2}$	20	14 $\frac{3}{4}$	10
A 6514	O_1	Garden Island	17.XI. 1948	89	77 $\frac{1}{2}$	24 $\frac{1}{2}$	19 $\frac{1}{4}$	14	9 $\frac{1}{4}$
A 6515	O_1	Garden Island	17.XI. 1948	86	76 $\frac{1}{2}$	21 $\frac{1}{2}$	18 $\frac{1}{2}$	14	9
A 6516	O_1	Garden Island	17.XI. 1948	92	82	23 $\frac{1}{2}$	21 $\frac{1}{4}$	16 $\frac{1}{2}$	11
A 6517	O_1	Garden Island	17.XI. 1948	85	79 $\frac{1}{2}$	24	21 $\frac{1}{4}$	16	10 $\frac{1}{2}$
8330	O_1	South Twin Peak Island	12.V. 1906	92	78	24	17 $\frac{1}{2}$	13 $\frac{1}{4}$	8 $\frac{3}{4}$
8332	O_1	South Twin Peak Island	12.V. 1906	93	81	25 $\frac{1}{4}$	20	14 $\frac{1}{2}$	10

|| Type of *insularis*.

TABLE LXI

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8314	O_1	Mt. Herbert	24.VII	71	....	19	16	11 $\frac{1}{4}$	7 $\frac{3}{4}$
A 8321	O_1	Tambrey	28.VII	79 $\frac{1}{2}$	62 $\frac{1}{2}$	21	18	13	8 $\frac{1}{4}$
A 8316	O_1	Tambrey	31.VII	80	65	20 $\frac{1}{2}$	17	12 $\frac{1}{2}$	8 $\frac{3}{4}$
A 8313	O_1	Millstream	26.VII	70 $\frac{1}{2}$	55	20	14 $\frac{1}{2}$	11 $\frac{1}{2}$	7 $\frac{1}{4}$
A 8315	O_1	Tambrey	28.VII	68	53	19 $\frac{3}{4}$	15 $\frac{1}{2}$	12	7 $\frac{1}{2}$
A 8319	O_1	Tambrey	28.VII	73	57	20	15 $\frac{1}{2}$	11 $\frac{3}{4}$	8
A 8320	O_1	Tambrey	28.VII	75	58	19 $\frac{1}{4}$	15 $\frac{3}{4}$	12	8
A 8311	O_1	Tambrey	29.VII	81	66 $\frac{1}{2}$	....	16	12	8 $\frac{1}{4}$
A 8322	O_1	Tambrey	30.VII	79	62 $\frac{1}{2}$	22	17 $\frac{1}{4}$	13 $\frac{1}{4}$	8 $\frac{1}{4}$
A 8317	O_1	Tambrey	31.VII	80	65	20 $\frac{1}{2}$	17	12 $\frac{1}{2}$	8 $\frac{3}{4}$
A 8312	juv.	Tambrey	29.VII	....	....	....	....	....	....
A 8318	juv.	Tambrey	31.VII	....	....	....	....	....	....

TABLE LXII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8168	O_1	Goola Lake, Roy Hill	12.VII	73	62 $\frac{1}{2}$	21	16 $\frac{1}{2}$	12	7 $\frac{3}{4}$
A 8172	O_1	Millstream	21.VII	81	68	21	17	13 $\frac{1}{2}$	9 $\frac{1}{4}$
A 8169	O_1	Millstream	19.VII	74	64	21	15 $\frac{1}{4}$	12 $\frac{1}{4}$	7 $\frac{3}{4}$
A 8170	O_1	Millstream	19.VII	76	68	19	16 $\frac{1}{2}$	12 $\frac{1}{4}$	7 $\frac{3}{4}$
A 8171	O_1	Millstream	19.VII	83	71	21 $\frac{1}{2}$	17	13 $\frac{1}{2}$	9 $\frac{1}{4}$

TABLE LXIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8239	♂	Mt. Herbert	24.VII	133	111	31	28	20 $\frac{1}{4}$	13 $\frac{3}{4}$
A 8241	♂	Tambrey	27.VII	136	111	30	26	20	13 $\frac{1}{4}$
A 8240	♂	Tambrey	3.VIII	136	111	32	25 $\frac{1}{4}$	19 $\frac{1}{4}$	13 $\frac{1}{2}$
A 8242	♂	Tambrey	30.VII	127	112	30 $\frac{1}{2}$	28	20	14

TABLE LXIV

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.
A 8181	♂ imm.	Millstream	26.VII	59	35	14	11
A 8186	♂	Tambrey	29.VII	58 $\frac{1}{2}$	37	13 $\frac{3}{4}$	12 $\frac{1}{2}$
A 8183	♂	Tambrey	1.VIII	61	37 $\frac{1}{2}$	15	12 $\frac{1}{4}$
A 8184	♂	Tambrey	1.VIII	59 $\frac{1}{2}$	35	15	12
A 8185	♂	Tambrey	1.VIII	61	37	15	10 $\frac{3}{4}$
A 8187	♂	Tambrey	4.VIII	58	36	14	12
A 8182	♂	Millstream	26.VII	59	32	14 $\frac{3}{4}$	9 $\frac{3}{4}$

TABLE LXV

No.	Sex	Location	Date	Wing	Tail	Tars.	Exp. cul.
A 8195	♂	Millstream	26.VII	56	33	13	10 $\frac{1}{4}$
A 8198	♂	Millstream	28.VII	57 $\frac{1}{2}$	34	14	10 $\frac{1}{2}$
A 8196	♂	Tambrey	31.VII	58	33	14 $\frac{1}{4}$	10
A 8199	♂	Millstream	28.VII	53	30	14	8
A 8200	♂	Millstream	28.VII	57	33	14 $\frac{1}{2}$	8
A 8197	♂	Tambrey	31.VII	53 $\frac{1}{2}$	30 $\frac{1}{2}$	13 $\frac{1}{4}$	9

TABLE LXVI

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8275	♂	Millstream	19.VII	164	110	39	25 $\frac{1}{2}$	20 $\frac{1}{4}$	15 $\frac{1}{2}$
A 8274	♂	Tambrey	1.VIII	184	124	42	28	20 $\frac{1}{2}$	16

TABLE LXVII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8140	♂	Millstream	25.VII	128	57	16	19 $\frac{1}{4}$	17	12 $\frac{3}{4}$
A 8139	♂	Millstream	19.VII	132	60	17 $\frac{1}{2}$	20 $\frac{1}{2}$	16 $\frac{1}{4}$	13 $\frac{1}{4}$
A 8141	♂ ?	Millstream	25.VII	131	58	17 $\frac{1}{2}$	22 $\frac{1}{2}$	18 $\frac{1}{2}$	13

TABLE LXVIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8153	♂	Tambrey	1.VIII	124	74	19	23 $\frac{1}{2}$	19 $\frac{1}{4}$	14 $\frac{1}{4}$

TABLE LXIX

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8154	♀	Millstream	18.VII	112	68	21	21	17½	13
A 8155	♀	Millstream	28.VII	113	66	20½	18	16¼	11½
A 8156	♀	Millstream	28.VII	116	67	21	19	16½	12
A 8157	♀	Millstream	25.VII	121	70	20½	20	17	13

TABLE LXX

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8148	♂	Tambrey	29.VII	107	59½	14¾	13½	11	8¼
A 8149	♂	Tambrey	29.VII	109	60	13¾	14¼	11	8
A 8150	♂	Tambrey	29.VII	109	60	13¼	14	11½	8
A 8151	♂	Tambrey	29.VII	102	57	14	14	12½	8¼
A 8152	♂	Tambrey	29.VII	102½	62	14¼	13	11¼	8
A 8145	♀	Millstream	20.VII	104	60	12¾	15¾	11¼	8¼
A 8146	♀	Millstream	21.VII	110	60	14	15½	13	8½
A 8147	♀	Millstream	22.VII	109	62	....	14¾	12	8¼

TABLE LXXI

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8134	♂	Tambrey	28.VII	179	131	36	....	51	38
A 8133	♀	Mt. Herbert	24.VII	178	135	36¼	....	46½	34

TABLE LXXII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8000	♂	Tambrey	4.VIII	252	134	56	....	63	46
A 7999	♀	Tambrey	2.VIII	235	123	48½	....	56½	40½

TABLE LXXIII

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 8341	♀	Marillana	12.VII	144	90	39	29½	24¼	17
A 8342	Millstream	26.VII	150	89	39	29	22	15½

TABLE LXXIV

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 7977	♂	Millstream	22.VII	317	172	55	50	....	32

TABLE LXXV

No.	Sex	Location	Date	Wing	Tail	Tars.	Ent. cul.	Exp. cul.	Cul. nostr.
A 7980	♂	Tambrey	2.VIII	360	189	58	60	....	38½
A 7979	+	Millstream	2.VIII	356	189	60½	61¾	....	41½
A 7978	—	Millstream	28.VII	335	180	59½	58	....	40½